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Gleanings in Bee Culture



Under the Peach Trees in Tennessee

VOL. XLVIII

June, 1920

NUMBER 6

HAVE YOU RECEIVED OUR 1920 CATALOG?

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BEEKEEPERS' SUPPLIES

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May is here, and the good familiar song of the Honeybees in the fruit bloom with it. Just one more month and the great honey harvest will be upon us, but the question is will you be prepared? Don't lose the best of the crop, because you waited to get your supplies. Order them today, and from TOLEDÓ, the most direct line to you in the country, and shipments go forward promptly, and at factory prices.

LIVE BEES IN 3-LB. PACKAGES WITH QUEEN.

If you have lost any bees the past winter, let us send you some of our 3-lb. packages next month to replace them, and save those good combs from the moth worm; besides, bear in mind one package will pay for 3, and the 3-lb. package is the most profitable to buy. Only a limited number to spare so order today.

NEW AND SECOND-HAND HONEY CANS.

We have a good stock of both new and second-hand cans. Our second-hand cans have only been used once, and are nice and bright inside, and in good re-shipping cases; they are as good as new and only one-half the price of new; they are going fast; so don't delay, order today.

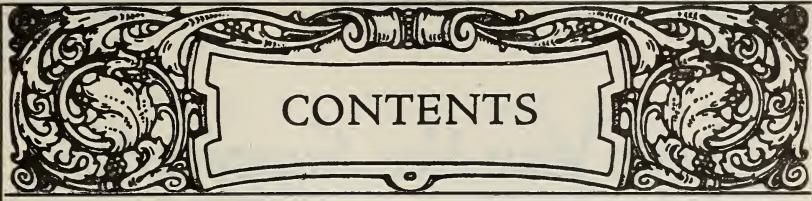
BEESWAX—BEESWAX.

We have an unlimited demand for good, first-class wax and will pay highest market price for all grades, but for Fancy Yellow Wax we will pay a premium over the market price. Write us how much you have and price wanted in first letter. **Free Catalog and Special Bee Price List.**

We want every beeman to have our catalog, and your name and address upon a postal will bring it. Write today.

THE GRIGGS BROTHERS CO. Dept. No. 25 TOLEDO, O.

"Griggs Saves You Freight"



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CHANGE OF ADDRESS.—Give your old address as well as the new and write the name to which the journal has heretofore been addressed. **REMITTANCE.**—Should be sent by postoffice money order, bank draft, express money order, or check. **CONTRIBUTIONS** to GLEANINGS columns solicited; stamps should be enclosed to insure return to author of manuscript if not printed. **ADVERTISING RATES.**—Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. **ADVERTISERS' LIABILITY.**—The publishers use utmost diligence to establish in advance the reliability of every advertiser using space in this journal.

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THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

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Assistant Editor

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Managing Editor

Order Your Bee Supplies Now

NOW is the time to check up on your hives and accessories to make sure that everything is complete and in perfect condition for the coming season. Our complete line of Bee Supplies includes everything needed by the modern Beekeeper. Besides our own exclusive articles, we are distributors for the famous Lewis Beeware line, and dealers in Root's Extractors and Smokers, and Dadant's Foundations. Orders placed now can be filled promptly. Prices on many articles are sure to advance within the next few months. Send for our large 1920 Catalog today.

Beeswax Rendered from Old Combs

WE pay you the highest market price for rendered wax, less 5 cents per pound rendering charge. Our special hydraulic steam wax press gets the very last drop of wax from old combs and cappings assuring you maximum profit on them. Write for full particulars.

Best Prices Paid for Honey

Tin Rabbets, Hives, all sorts Extractors	Foundation, Dadant's Root's Smokers Excluders, all makes Division Board
Wax Extractors	Metal Spaces Uncapping Knives Tin Tacks Honey Boards
Covers for Hives Observation Hives	

SEND us samples of your honey and we will quote you a price equal or better than that of any other concern. We buy and sell both comb and extracted honey. Cash remitted in full the same day shipment is received.

Send for Our Large New 1920 Catalog

THIS new catalog contains over 40 pages of every variety of Beekeepers' Supplies, including all the latest and most improved devices. It is really a valuable reference book on beekeeping accessories. -:- -:- -:- -:- -:- -:-

THE FRED W. MUTH CO.
"THE BUSY BEE MEN"

CINCINNATI, O.

SUPERIOR FOUNDATION ASSURES SUPERIOR QUALITY

Hundreds Pronounce It "Best by Test."

OUTPUT DOUBLED. The enormous demand for SUPERIOR FOUNDATION has required the doubling of our manufacturing facilities. We have doubled our Ogden factory in size for 1920, and have also added sufficient new machinery to double our output of foundation. We now occupy over 20,000 square feet of floor space with our enlarged factory of three floors, and invite you to visit us whenever in Ogden.

THERE'S A REASON for this rapid growth. Acquaint yourself with the superiority of our product. Every pound we manufacture is backed by our reputation for highest quality and square dealing.

BEESWAX ARRIVALS during the past thirty days have been very liberal, but we still require additional quantities at highest market price.

OUR BEE SUPPLY DEPARTMENT is humming. We can fill your order for "Everything in Bee Supplies." Prices on request.

Superior Honey Company :- Ogden, Utah
(MANUFACTURERS OF WEED PROCESS FOUNDATION)

BEE SUPPLIES

BEE SUPPLIES

SERVICE & QUALITY

Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog--better still, send us a list of your supplies and we will be pleased to quote you.

C. H. W. WEBER & COMPANY

2146 CENTRAL AVE.

CINCINNATI, OHIO

HONEY MARKETS

The honey market is not unlike the sugar market—the price is high and that price is what can be got for it from day to day. The demand is good and likely to stay good as long as the price of sugar continues to skyrocket. The Government market quotations are given below:

U. S. Government Market Reports.

SHIPPING POINT INFORMATION—MAY 14.

LOS ANGELES, CALIF.—Demand good, movement limited, market active, prices slightly higher. Old honey practically exhausted, no new stock yet on market. Carloads f. o. b. usual terms; Fancy white sweet clover 20c, light amber sage 18½c, light amber alfalfa 18c.

SAN FRANCISCO, CALIF.—Demand and movement good, supplies light. Prices paid to beekeepers, per lb.: Light amber alfalfa 15½-16c, orange blossom 17½-18c. Beeswax, 40-41c.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

(In many markets the term "jobber" is commonly applied to the original receiver who buys direct from the grower in carlot quantities. However, we use the term "wholesale carlot receiver" to designate the carlot purchaser, while the term "jobber" refers to the dealer who buys in less than carlot quantities from the carlot receiver and who sells direct to retailers. The prices quoted in this report, unless otherwise stated, represent the prices at which the "wholesale carlot receivers" sell to the "jobbers." Arrivals include receipts during preceding 2 weeks. Prices are for May 14.)

BOSTON.—No arrivals reported since last report. Supplies moderate, demand good, movement moderate, market firm. Sales to jobbers, extracted, California sage 22-23c per lb. Comb, New York, 24-section cases white clover \$8.00-8.50.

CHICAGO.—Receipts very light, supplies light, demand and movement good, market firm. Sales to jobbers, extracted, Montanas, Californias, Ohios, and Minnesotas, white mostly 22c, light amber 19½-20½, dark amber 19-20c. Comb, supplies practically exhausted, no sales reported. Beeswax: Since last report, approximately 3 tons imported from South America, domestic receipts light. Supplies moderate, demand and movement good, market steady, little change in prices. Sales to jobbers, per lb., Montana, Colorado, and California, light 45-46c, dark 42-44c. Imported, light mostly 40c.

CINCINNATI.—4,400 lbs. from Nebraska arrived since last report. Supplies light, demand good, movement limited, market firm. Sales to jobbers, per lb., extracted, Western white 20-21c. Beeswax: Supplies light, demand and movement moderate, market steady. Sales to jobbers, per lb., average yellow 43-46c.

CLEVELAND.—Supplies very light, demand good on account of sugar shortage and old stock practically exhausted, few sales. Sales to jobbers, per lb., extracted, Western 60-lb. cans light amber and white sage 20-25c.

KANSAS CITY.—No arrivals since last report, supplies light, demand and movement moderate, market steady. Sales to jobbers, comb, Western 24-section cases light mostly \$7.50. Extracted, per lb., Western light amber 18c, dark 16c.

MINNEAPOLIS.—No carlot arrivals; no cars on track. Supplies moderate, receipts heavy, market steady. Sales direct to retailers: Western, comb, No. 1, white 24-section cases \$7.50. Extracted: 60-lb. cans light amber 21-22c per lb.

NEW YORK.—No domestic arrivals reported since last report. Supplies very light, demand moderate, market firm. Sales to jobbers and large wholesalers: Extracted, Domestic per lb. Californias, light amber, alfalfa and white orange blossom mostly 19-20c, few 21c, light amber sage 21-22c. Imported: West Indies, refined mostly \$1.85-1.90 per gallon. Chilean light amber alfalfa 18½c per lb. Comb, no supplies. Beeswax, no domestic arrivals reported since last report. Supplies light, demand light, movement draggy, market dull and weak. Sales to jobbers and large wholesalers: South American and West Indies, refined light 42-44c, few 45c, dark 30-33c, domestic refined light

44-45c; African refined light 31-32c, dark 28-30c, few 31c.

PHILADELPHIA.—No arrivals since last report. Demand and movement good, market stronger. Sales to jobbers: Extracted, per gallon, Floridas, fancy light \$1.90-1.95, Southern amber \$1.88-1.93.

ST. LOUIS.—No carlot arrivals since last report. Supplies light, demand and movement slow, market dull. Sales to jobbers, per lb., extracted, 60-lb. cans light amber 16-17c, dark 15-16c. Beeswax, almost too few sales to establish market, 38-39c per lb.

ST. PAUL.—No carlot arrivals since last report. Supplies light, demand and movement light, market steady. Sales direct to retailers: Comb, Western No. 1 white 24-section cases \$7.25-7.50. Extracted, too few sales to establish market.

George Livingston,
Chief of Bureau of Markets.

Special Foreign Quotations.

LIVERPOOL.—Since our last report the market has been very dull. The recent inquiries for quantity have not resulted in any bids being made. We calculate the value of extracted honey in American currency to be about 12½ to 13 cents per lb.

The market for East African beeswax is very dull. The value in American currency is about 35 to 36 cents per lb.

Taylor & Co.

Liverpool, England, April 27, 1920.

CUBA.—We quote honey here at \$1.20 to \$1.25 per gallon; wax \$36.00 per quintal, 100 lbs.

Adolfo Marzol.

Matanzas, Cuba, May 6, 1920.

Opinions of Producers.

Early in May we sent to actual honey-producers the following questions:

1. In your opinion about what per cent of colonies in your State were lost during the winter and spring?
2. How does the present condition of colonies compare with the usual condition at this time of the year? Please report as very poor, poor, normal, good, or very good.
3. What is the condition of honey plants in your State?
4. What is your opinion of the crop prospects in general?

Answers, as condensed by the Editor, are as follows:

IDAHO.—Loss 7 per cent. Colony condition very good. Plants fair. Prospects fair.—E. F. Atwater.

ILLINOIS.—Loss 25 per cent. Colony conditions normal. Plants good but late. Prospects good.—A. L. Kildow.

INDIANA.—Loss 50 per cent. Colony condition poor. Very little clover. Prospects poor.—E. S. Miller.

IOWA.—Cellar-wintered loss 5 per cent, wintered outside 40 per cent. Colony condition rather poor. Clover badly killed. Prospects fair to good.—Frank Overdale.

MARYLAND.—Loss 25 per cent. Colony condition late in building up. Plants normal but late. Prospects fair.—S. G. Crocker, Jr.

MASSACHUSETTS.—Loss 25 per cent. Colony condition normal. Plants fine. Prospects good.—Omer M. Smith.

MINNESOTA.—Loss 30 per cent. Colony condition very poor. Plants very good. Prospects fair or normal.—Chas. D. Blaker.

MISSOURI.—Loss 10 to 15 per cent. Colony condition poor. Plants very good. Prospects good.—J. W. Romberger.

MONTANA.—Loss 25 to 30 per cent. Colony condition very weak. Not a blossom yet (May 12.)—Clark W. Allen.

NEW JERSEY.—Colony condition low. Plants about normal.—Harry B. Weiss.

NEW YORK.—Loss 50 per cent. Colony condition poor. Plants good. Prospects fair.—G. H. Rea.

NEW YORK.—Loss 40 per cent. Colony condi-

tion very poor. Plants good. If drouth continues, prospects very poor.—Adams & Meyers.

NEW YORK.—Loss about 20 per cent. Colony condition poor. Plants good. Prospects good.—F. W. Lesser.

NEBRASKA.—Loss 50 per cent. Colony condition poor. Plants good. Prospects good.—F. J. Harris.

OHIO.—Loss 50 per cent. Colony condition poor. Plants fairly good. Prospects fair.—Fred Leininger.

OKLAHOMA.—Loss 15 per cent. Colony condition poor. Plants good. Prospects fair.—C. F. Stiles.

ONTARIO.—Loss between 20 and 30 per cent. Colony condition poor. Plants generally good. Prospects generally good.—F. Eric Millen.

PENNSYLVANIA.—Loss 50 per cent. Colony condition poor. Plants backward. Prospects fair.—Harry W. Beaver.

UTAH.—Loss 50 per cent downward in Duchesne County. Colony condition bad.—W. J. Harvey.

WASHINGTON.—Loss 3 to 5 per cent. Colony condition good. Plants normal. Prospects good. Geo. W. B. Saxton.

WISCONSIN.—Loss 20 to 25 per cent. Colony condition poor. Plants very good. Prospects good.—H. F. Wilson.

The questions sent to producers in California and Florida were different from those sent to the other States, and are as follows:

1. How does the present condition of colonies compare with the usual condition at this time of the year? Please report as very poor, poor, normal, good, or very good.
2. What is the condition of honey plants in your State?
3. About what per cent of the crop is already harvested?
4. Has as much honey been harvested as usual at this time of the year?

The answers are as follows:

CALIFORNIA.—Colony condition about normal. Plants, small crop. About 50 per cent of honey crop harvested. Up to date bees have done well.—R. E. Lusher.

CALIFORNIA.—Colony condition very poor. Plants only fair. None of the crop harvested.—M. H. Mendleson.

CALIFORNIA.—Colony condition normal. Plants good. Ten per cent of crop already harvested, which is as much as usual.—L. L. Andrews.

FLORIDA.—Colony condition normal. Plants poor. Ten per cent of honey already harvested, which is not as much as usual.—Ward Lamkin.

Advertisements Received too Late to Classify.

FOR SALE.—Bees, 2-lb. packages, \$4.50; untested queens (Gleanings Code), \$1.50. No foul brood known within 100 miles.

S. T. Crawford, R. D. No. 1, Glendale, Ariz.

IT PAYS BIG to advertise right. How is your Bill Board Service? Let me give you estimates on 9'x18' Bill Board sketches and drawing in miniature or full size. Paint on yourself, or comes ready to nail in position. If interested, write for prices and particulars. Henry A. Schaefer, Osseo, Wisc.

FOR SALE.—20 10-fr. dovetailed hive bodies with H. frames, good condition, \$25.00; 10 gable covers, canvas covered and inner covers, 10-fr., \$8.00; 10 reversible 10-fr. bottoms, \$7.00; 10 10-fr. Root 4x5x1½ comb supers with sections, new, never used, \$21.00; 10 Root queen-mating nuclei, \$15.00; 50 10-fr. wood bound zinc excluders, \$15.00; 1 Alexander honey strainer, new, never used, \$6.00; 500 4x5x1½ sections, \$4.50; 15 lbs. thin super fdn. for 4x5 sections, \$11.00; 1 Root section press, new, \$1.75; 2 10-in. Root uncapping knives, new, \$2.00; 1 Peterson capping melter, little used, painted, \$14.00; 1 separating can good as

new, \$3.00; 150 lbs. Dadant medium brood fdn. in 50-lb. boxes, per box, \$34.00; 1 good pick-up cart, \$5.00; 10 Miller feeders in good condition, \$3.50. Goods sold only as listed, f. o. b. here, 10 per cent with order, balance on arrival. Hive parts listed are set up and painted. All goods guaranteed as advertised. Absolutely no disease.

Wm. Gabriel, Scribner, R. D. No. 3, Nebr.

Special Notices by A. I. Root

LATEST FROM THE FLORIDA ANNUAL SWEET CLOVER.

On page 362 I tried to give you a picture of my little clover plants. Well, a second photo, taken only 17 days later, shows the little plant almost up to the top of the yardstick, and branching out accordingly, having made the enormous growth of *full 20 inches* in this short time. Picture in next issue.

THE ROYAL PALM NURSERIES, ONECO, FLA.

Should you make a trip to Florida, especially if you plan to visit the southwest coast, don't fail to take in the Reasoner nurseries. Even if you don't take the trip, but are curious to know what can be grown in Florida, not only out in the open air, but also with proper protection, you had better send for their beautiful new catalog. The part of the catalog devoted to new and up-to-date Florida fruits, was of especial interest to me, in several ways.

"DAILY BREAD."

The article on page 365 was intended for the May Gleanings, but room was not found for it. However, this same process can often be used to advantage in the month of June. If you have some ground that is not yet ready for potatoes, or some ground that will be ready after another crop has been cleared off, start your potatoes in a bed of very rich soil as I have described, and have them in such shape that when the ground is ready they will just start out under "high-pressure gardening."

SEED OF THE NEW ANNUAL WHITE SWEET CLOVER.

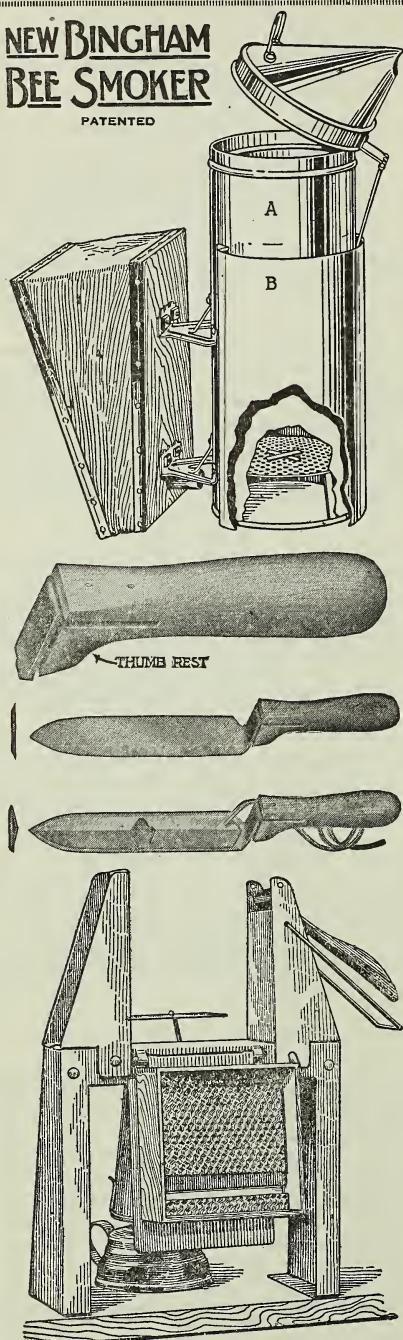
On page 236, April issue, I said I did not know of any one in the whole wide world who had any of this seed that could be furnished, except one, and that was the Henry Field Seed Co.; but they inform us, May 1, that they are completely sold out. Now, I do not know whether the station at Ames, Iowa, is still sending out small packets or not. In this issue you will notice they have been having a tremendous call. Well, at the present writing, May 12, we have enough for 500 or 600 packets, giving each applicant a packet of perhaps 15 or 20 seeds. These will be sent to any one who will send an addressed stamped envelope, so long as the seeds last. After that we will hold your envelope for seeds that I expect will be ready to be gathered in Florida some time in June or July.

OVER 1,000 BUSHELS OF POTATOES FROM ONE ACRE OF LAND GROWN LAST SEASON.

The man who performed this wonderful feat in agriculture is C. Norgate of Dryden, Ont., Canada. He is a beekeeper; and, by the way, he is a successful beekeeper, and so, of course, he is a good man, and his statement is straight and honest. Furthermore, he sent me two photographs of the potatoes as they lay in the field at the time of digging. The variety is a type of the Green Mountain that he has developed by careful work for years past. He sent me last fall a couple of pounds by mail, and in my Florida home I grew over two bushels from the two pounds, and got the first premium (something over \$5.00) at the Manatee County Fair. They were certainly the most beautiful potatoes I ever saw. In fact, a basketful looked like a basket of newly laid eggs, they were so white and smooth and clean—not a sign of blight, fungus, or anything until the frost came and cut off my crop. I think Mr. Norgate makes a business of growing seed potatoes that in a remarkable manner resist blight, fungus, and disease of every sort. I do not know his prices, but probably you can get them by writing him. We expect to give, in our next issue, a valuable letter from him in regard to the success he has had with his bees as well as potatoes.

NEW BINGHAM BEE SMOKER

PATENTED



The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all-important tool of the most extensive honey producers in the World. It is now made in five sizes.

	Size of Postage extra	stove inches	weight price lbs.	extra.
Big Smoke, with shield	4 x10	3	\$2.50	
Big Smoke, no shield.	4 x10	3	2.00	
Smoke Engine	4 x7	2 1/4	1.50	
Doctor	3 1/2 x7	2	1.15	
Conqueror	3 x7	1 3/4	1.00	
Little Wonder	3 x5 1/2	1 1/2	.80	
Smoke Engine or Doctor, in copper,				\$1.00

The Big Smoke has just been produced in response to a demand for a larger-size smoker, one that will hold more fuel, require filling less often, from extensive bee handlers.

East Lansing, Mich., May 10, 1920.
A. G. Woodman Co., Grand Rapids, Mich.

Dear Mr. Woodman:—I have now had several weeks' opportunity to try out the New Smoker called the Big Smoke, with the guard about the fire pot. The smoker is even more than I anticipated and unless something else is brought out that is still better, you can be assured that this particular one will be standard equipment for this place from now on.

B. F. Kindig,
State Inspector of Apiaries.

The Genuine Bingham Honey Uncapping Knife is manufactured by us here at Grand Rapids and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old timers will remember. Our Perfect Grip Cold Handle is one of the improvements.

The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

TIN HONEY PACKAGES.

2 lb. Friction top cans, cases of 24
2 lb. Friction top cans, crates of 612
2 1/2 lb. Friction top cans, cases of 24
2 1/2 lb. Friction top cans, crates of 450
5 lb. Friction top pails, cases of 12
5 lb. Friction top pails, crates of 100
5 lb. Friction top pails, crates of 200
10 lb. Friction top pails, cases of 6
10 lb. Friction top pails, crates of 100

Ask for our special money-saving prices, stating quantity wanted.

A. G. Woodman Co., Grand Rapids, Mich., U. S. A.

Seasonable Suggestions:

Hoffman frames with 1 1-2-in. spacing supplied for either standard or Jumbo depth. Write us if interested.

Note that packages weighing up to 70 pounds may be sent by parcel post. If you are on an R.F.D. route it is often cheaper than express or freight on quite large shipments. We make a specialty of quick service on all such orders.

We want beeswax. We pay the highest market price. How much have you?

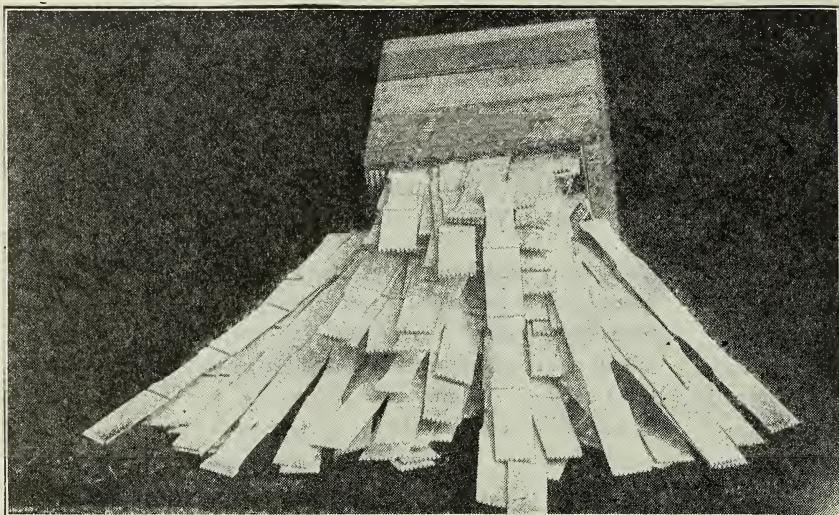
We supply Root's goods in Michigan. They are best known for their good quality. Our part is quicker and cheaper service.

Beginners' outfits either with or without bees. Our best equipment included with them. See pages 51-54 of the new catalog.



M. H. Hunt & Son
510 North Cedar Street
Lansing, Michigan

LEWIS ONE-PIECE SECTIONS



June 28, 1881 was a "red letter" day in American beekeeping.
 Lewis one-piece section experiments ended on that date.
 Letters of patent were granted to the successful inventor.
 These experiments were carried out in the Lewis laboratories.
 Next to Langstroth's this invention ranks among the first.
 Quality of Lewis sections has been maintained to this day.
 Every box, every carload, every trainload is A-1 quality.

Avoid glutted extracted honey markets---raise comb honey.
 To get the highest market price, use Lewis 1-piece sections.

Look
for



This
Mark

Service Department—Let us help you with your problems, free.
 May we send you a "Beeware" catalog? A distributor is near you.
 Read "How To Manage Bees In Spring," a Lewis booklet, price 5c.

G. B. LEWIS COMPANY

Makers of Beeware

WATERTOWN

Branches and distributors everywhere.

WISCONSIN

GLEANINGS IN BEE CULTURE

JUNE, 1920

A BEEKEEPER addressing Gleanings begins a complaint against Southern queen-

and bee-rearers by
Too Early Orders. saying that there seems to be a strife between Southern

breeders as to who can advertise earliest delivery of queens and bees; and adds that since our seasons seem to be getting later each year and breeders unable to fill orders on time, a great deal of loss and disappointment is experienced by buyers of bees and queens, and especially by inexperienced buyers.

As we see it, both parties are at fault in this matter; the breeder, because he promises delivery at a time which is at best uncertain; and the buyer, because (with insufficient knowledge of the business) he tries to do something that the experienced beeman would not attempt, namely, to build up colonies from pound packages in too early spring. Where these packages are ordered for the purpose of strengthening weak colonies it is well enough to get them early, altho they would probably do just as much good if they were not received until settled warm weather; but where they are wanted for starting colonies it is much safer to wait until after the season of cold, rainy weather which we are so likely to have during the early fruit bloom.



"TOO MUCH LAND to navigate, and too much water to cultivate." This is a literal statement concerning

An Eye-opener—ing some of the Conditions best bee country in the Southeast. the Editor has visited in some 25,-

000 miles of travel during the last year.

It has been commonly believed that the great bee operations would hereafter have to be confined to that portion of the country west of the Mississippi, and particularly to those States where irrigation is practiced; but during the last few weeks the Editor has had his eyes opened. It is, perhaps, not wise to indulge in prophecies; but he ventures to predict that the greatest development in bee culture in the next 10 years will be thruout the Atlantic coastal plain along the rivers and streams from Virginia to Texas. While there are wonderful opportunities opening up in the Appalachian Mountains, the great future, undoubtedly, lies largely within 100 miles of the southeast Atlantic coast. Government statistics go to show that there are more bees and beekeepers in North Carolina, South Carolina, and Georgia, than in any other section

of equal area in the United States. While Government statistics are none too reliable in that they do not take into account many of the professional beekeepers and small beekeepers located in the towns and cities; yet for the purpose of comparison they show that the area mentioned has more bees, mainly in box hives and log gums, than elsewhere, unless we except two or three of the western States.

The very fact that bees under that kind of haphazard management (under which the best colonies are brimstoned, only secondary colonies kept, and all second and third swarms lost) can live on year after year, shows there must be something extraordinary in the territory. What could be done under intelligent management with modern equipment and saving all the bees can only be guessed.

At the present time box hives and log gums in this territory are rapidly giving way to modern equipment and management, thanks to U. S. Government and State aid. But there are thousands upon thousands of colonies in gums that can be had from \$1.50 to \$4.00 a colony; and these, when transferred into modern hives, are serving as wonderful object-lessons.

It has been generally believed that the honey of the Southeast is of inferior quality. Nothing could be further from the actual truth. Gallberry is found all the way from North Carolina along the coast and up the rivers to Texas; and pure gallberry honey, without admixture of tupelo, is so much like that from white clover with a little basswood mixed that it would take an expert to tell the difference. The tupelos and the black gums are found along the rivers, and yield a very superior light-colored honey. There is also the huckleberry, high and low bush, that yields an inferior honey that comes on to give a boost to the bees. Blackberry bushes, a very reliable source of honey for stimulating, are everywhere, up in the mountains and on the coastal plains. Cotton is all over the South and yields a good honey. Then there comes the titi—an inferior honey compared with those mentioned, but very abundant further southward. Running up thru the north-central section of Florida is the partridge pea, a wonderful yielder furnishing honey for three months.

In southeast Georgia, where the gallberry is at its best, and where also grow the tupelos and the black gums, are some of the largest and most up-to-date beekeepers of the country. For example, there is J. J. Wilder with 10,000 colonies, and a half-

dozen others with from 1,000 to 3,000; and they all say there is more territory open not yet covered by bees.

Further north, in North Carolina and Georgia, particularly along the rivers, is some very fine bee country, and yet not a modern beekeeper within 40 or 50 miles in some places.

The old slogan, "Go west, young man," has been the slogan of the young beekeeper; but the Editor predicts that there will be a new slogan, "Go southeast, young man." And remember that with all its wonderful opportunities this region is close to the great centers of population — that is, the great honey-consuming public.

Do not get an idea that this country is all "velvet," and that there are no obstacles to overcome and no failures. It should be made very plain that some of this wonderful bee country is swampy, and always will be so. In the language of a county extension man, "There is too much land to navigate, and too much water to cultivate." The very swampy character of the land means mosquitoes and venomous snakes in a jungle of honey plants. The population is sparse, and the villages are small and primitive. There are no electric railways nor electric lights, and some of the country roads are abominable. The winters and springs are often chilly and damp, and the summers are very hot; but in spite of mosquitoes and redbugs there is but very little malaria, for the reason that the malarial mosquito can not develop in sour soil.

After all, is there any good thing without some drawbacks? The Editor of Gleanings believes that, in spite of these bad things, there are hundreds of beekeepers who will migrate into this country, buy up bees in log gums, transfer them, and reap splendid returns, but not until they have learned the country and the wintering and starvation problems. Success will not come the first year. There will be a lot of that kind of experience that Josh Billings tells about. The bees there breed enormously, the queens wear out fast, and, unless one knows the conditions, he will be a sadder (yes, and a madder) man—mad at Gleanings for ever getting him into such a mess of swamps, mosquitoes, redbugs, chiggers, snakes, worn-out colonies, worn-out queens, and a home in a jungle miles from nowhere.

The Editor took several hundred photos, and later on will give his readers pictures and detailed statements of all these places.

UNDER THE PRESENT unprecedented sugar situation beekeepers are unable to obtain enough

Plan for It Now! sugar for fall feed-

Plan for It Now! ing; and, even if

Plan for It Now! they were able to obtain it, they

could ill afford to feed it to their bees at present prices and then sell their honey at a lower price than they paid for the sugar.

If this month were October instead of June and the sugar shortage had stolen upon us all unawares, we would feel that those beekeepers who had foul brood to contend with could not safely feed back honey a part of which might have come from diseased colonies, and that they, therefore, must have the sugar, even if they have to pay 50 cents a pound for it; otherwise there would be nothing ahead for their colonies but foul brood or starvation. But, fortunately, the shortage (or hold-up by profiteers) arises early enough in the season so that another and very satisfactory alternative is at the command of the beekeeper who is foresighted enough to plan his work a few months in advance—and right now is the time to do that planning.

All he needs to do is to produce, in old combs suitable for wintering and of the same size as those in his brood-chamber, enough good honey to carry his bees thru winter. If there is danger of foul brood in any of the colonies, the winter stores should, in each case, be retained by the colony that stored them, in order that the risk of spreading disease be avoided.

When the time for extracting comes, the high price of honey may tempt a few to extract too closely, but let any such remember the oft repeated warnings given by Gleanings last year, and let him recall how these warnings were verified by the starvation of 50 to 75 per cent of the colonies in some apiaries (and even 100 per cent in a few cases that have come to our attention). Think of it—such a great loss as this from starvation alone! We cannot give the per cent loss from starvation thruout the United States, but we know it was very large. Another similar loss the coming winter would indeed be a calamity to the beekeeping world.

Let us all make it our business to show as much foresight as the bees themselves, and no matter how it may cut into our surplus let us see that each colony has 30 to 40 pounds of good stores in good combs set apart for winter. These stores in the hives will be of much more value to the beekeeper than many times their money value in the bank.



UNFORTUNATELY, many have misunderstood the claims made by the Aluminum Honey Comb Company.

Aluminum Comb—What About It? This company, we believe, never claimed that aluminum combs

would cure foul brood, and yet, it seems that many beekeepers have believed that with the purchase of these combs all foul-brood troubles would be over. Now, if it is true that aluminum combs infected with foul brood may be sterilized and made clean enough to rewax and return to the bees, then the price of a set of combs would be saved and the unpleasant work of wax-rendering avoided; but, with this possible ex-

ception, we fail to see one single point in favor of the aluminum comb in connection with foul brood. Colonies on aluminum combs become infected with foul brood just as readily as do those on wax combs; in fact, more readily in some localities because weaker. Moreover, in case a colony becomes infected, one could not cure foul brood with any more certainty nor in one second less of time with aluminum combs than with regular drawn combs. Some, we understand, have shaken diseased colonies from the infected combs immediately upon a set of aluminum combs expecting thus to cure them of disease. We wish to caution our readers that such a practice is not one whit safer than to shake the colony upon drawn combs, for, in either case, the bees being gorged with diseased honey store part of it in the cells. If there is a honey flow at the time, the contaminated honey may be covered up with new honey for months so that the colony appears to be cured; but, as soon as the honey gets low in the cells, the colony may be expected to show evidence of the disease.

In regard to the possibility of sterilizing the combs, rewaxing and returning to the bees, we can only give our own experience. Last fall in an apiary of about 60 colonies, two became infected with foul brood. One of these two was on aluminum combs. We secured these combs and observing from the article in the March number of the American magazine that they could be sterilized in hot water without hurting them in the least we decided to boil them. We boiled them for 10 or 15 minutes, but this we found was not long enough, so we just kept on. After three hours we found the cocoons, and most of the decayed matter stayed right in the cells and they certainly were far from clean and surely could not be rewaxed in that condition. Steam at high pressure blown on the combs removes most of the cocoons in time, but not all. It is probably true, however, that the disease germs are killed by the boiling or steaming, and the bees can perhaps clean out the cocoons and decayed matter if given enough time. But in handling over the combs we note some of the edges of the cells were bent. These the bees certainly cannot straighten.

We also have tried aluminum combs in a number of our hives, and have made other observations in regard to the combs. In some colonies we used aluminum combs entirely, in others some aluminum and some drawn comb. Our experience has been far from satisfactory. Except during a few weeks in summer when conditions are most favorable, the queens do not do as good work as in the drawn combs, but lay their eggs very scatteringly.

Whenever we placed an aluminum comb in the middle of the brood-chamber with drawn combs at the sides we found the queen would have brood in the drawn combs at both sides of the metal comb, but not a single egg in the metal comb. Some of our

colonies refused to have anything to do with the metal combs as long as there were enough drawn combs in the hive.

All the colonies we supplied with aluminum combs dwindled, the old bees dying faster than the young ones could come on to take their places. Two colonies that were put on metal combs only, were fed quite continuously throughout the summer in order to see how they would build up. The greatest amount of brood one colony had at any time was four frames and the other colony only three, and by winter the colonies had dwindled so greatly that they were quite worthless. In the spring and fall the combs are too cold, and the brood is chilled. That is why all the colonies on aluminum combs dwindled as they did. To look at a colony when combs are in this condition with at least half of the brood dead is surely discouraging.

Not only did the combs prove poor for the rearing of brood, but also the bees refused to store syrup in them when the weather was a little cool in the fall, altho they stored readily in the drawn combs. Also when cool the bees refused to cluster on these combs, if they possessed enough drawn combs to accommodate them.

In regard to wintering on these combs, we have had a few unfavorable reports, such as that of J. L. Byer in this issue.

We regret that we are unable to tell from our own experience how the bees winter on metal combs, but we are going to tell why we can throw no light on the subject. It is simply because the brood died, and the colonies dwindled to such an extent that they were too small and worthless to winter.

For some time we have been feeling a little doubtful concerning the value of these combs, but since some good beekeepers have appeared to like them, we thought perhaps the difference might be due to the difference in climate, and perhaps in our locality it was too cool. Lately, however, we have learned of some who are objecting to the combs because the metal gets too hot. One such person, W. S. Pender, editor of The Australian Beekeeper, who recently spent a few days in Medina, said that he had no use for metal combs in his locality since they frequently have temperatures of from 100 to 120 degrees Fahrenheit in the shade, and he felt the metal would become so hot as to cook the brood, just as it has done in some parts of our own country.

A comb that is to be universally successful, we believe, should be composed of material that does not subject the brood to such sudden changes of temperature as does aluminum.

Perhaps, as a few of our correspondents have suggested, some of our readers may be willing to give us the value of their experience with these metal combs. It certainly would be worth while to settle definitely whether the aluminum combs are good or bad, or good in some localities and no good in others.

ONE of the most extensive queen and bee breeders of the United States is A. J. Pinard of Morgan Hill, Calif. His locality in the San Jose Valley is one of the best in the United States for the rearing of queens. Bees can gather honey almost every month in the

EXTENSIVE QUEEN - BREEDING

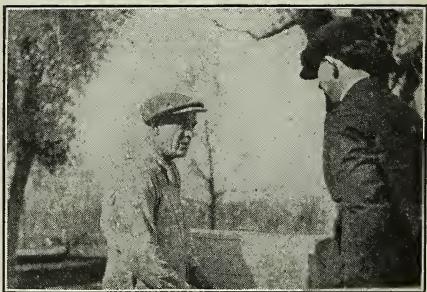
*Some Big and Little Tricks of the Trade Useful to Honey-producers
as well as to Queen-breeders*

By E. R. Root

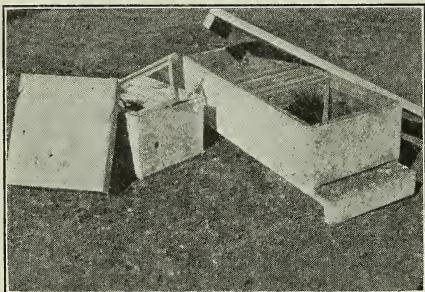
large part of the grafting and the general correspondence. Both are in the prime of life and thoroughly enjoy their work. I am pleased to introduce them to our readers by picture. I had some difficulty in getting these pictures, but finally got his wife and himself to stand up and be "shot"



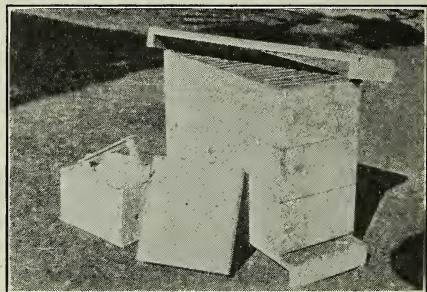
1.—Mr. and Mrs. A. J. Pinard of Morgan Hill, Calif. They raised 6,000 queens last year.



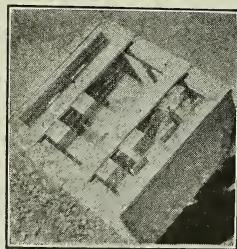
2.—Mr. Pinard's face shows that he is alert and intense.



3.—The great problem with baby nuclei is to keep them supplied with bees, brood, and honey. These little clusters of bees are liable to dwindle. Mr. Pinard very nicely solved this problem by making up what might be called "baby Long Idea hives" that will hold 25 baby frames. Three of such baby Long Idea hive-bodies, piled one on top of the other, will hold a fair colony. See figure 4.



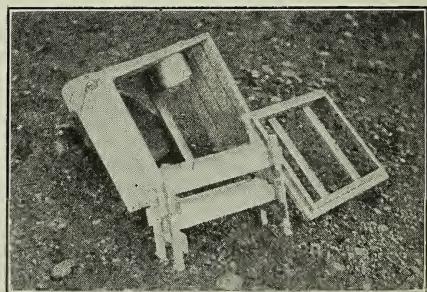
4.—Three-story baby Long Idea hives with full colonies to supply the small hives.



5.—This is a regular Root pound cage for shipping bees without combs (one side removable).

year, so that but comparatively little feeding is required.

Mr. Pinard, altho an extensive breeder, has hitherto been unknown, because he has been selling direct to other breeders. His right-hand man and helper, his wife, does a

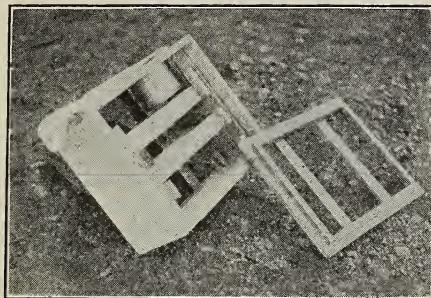


6.—Not only are the sides removable, but the framework also. See next figure.

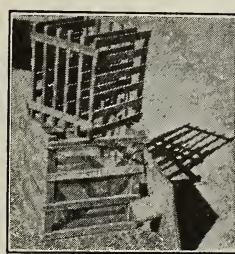
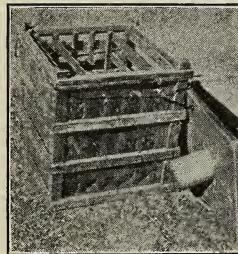
in orthodox fashion. They are jovial people and good hosts.

A general survey of Mr. Pinard's premises and equipment convinced me that he is not

only a good business man, a good beekeeper, and a good queen-breeder, but an all-around genius. It is some of his tricks of the trade that I wish to show at this time, not only because they will be helpful to queen-breeders, but in a larger way to honey-producers.



7.—The tin can at the top is supplied with a thin syrup. It is an ordinary friction-top container with a small hole in the bottom thru which food is supplied to the bees.



8 and 9.—The same general principle as shown in 5, 6, 7, except that the top is removable instead of the side. In this connection it should be stated that a removable framework will facilitate the removal of the bees at destination. When the framework is made fast it is very difficult to get the bees out of the cage. In order to make large shipments of bees, Mr. Pinard puts these boxes of bees into crates of a dozen or two. When the cages are emptied of bees at destination the whole thing is shipped as empty and then refilled. In this way the crates can be used over and over again.

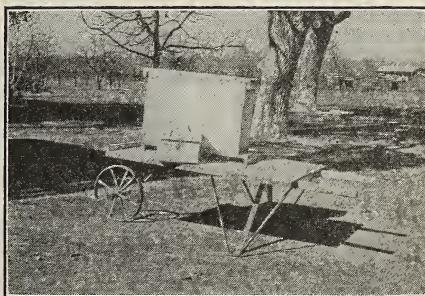
Any man who can raise 6,000 queens by the help of his wife in one season and furnish several thousand pounds of bees and get a moderate crop of honey on top of all that, would not only have to employ methods but use devices that would cut the labor of himself and wife down to a minimum.

He is one of the few who know how to manage baby nuclei. For keeping them supplied with brood and bees he has a trick that is really worth knowing. The story is told in Figs. 3 and 4.

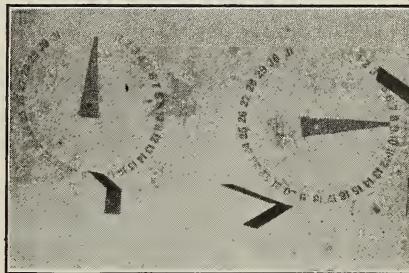
A number of three-story baby Long Idea hives containing full colonies are kept for supplying with bees, brood, and honey the small hives shown on the left in illustration No. 4. Sometimes only a frame of hatching brood is given. At other times a frame of brood and bees is given. With a few such

hives kept in a mating yard it is perfectly easy to keep each baby hive well supplied with bees as well as food.

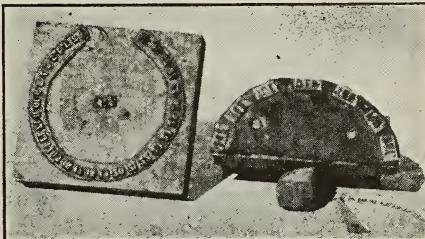
For shipping bees in pound packages, he has also another trick, that ought to be known all over the entire United States.



10.—The Pinard wheelbarrow. Any good mechanic can make one from the illustration. The fruit trees in the background give an idea of the country.



11.—This shows Mr. Pinard's scheme for keeping his hive records. The pointer gives the date. These figures are stamped on the covers of the baby hives with a rubber stamp, which any rubber-stamp concern can make.

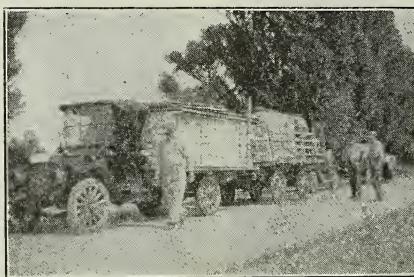


12.—Notice that there is another rubber stamp showing the months of the year.

Whether he invented or devised it I do not know; but certainly it was employed a year ago both by him and Mr. Wing in shipping that large order of 3,000 two-pound packages of bees to Harry Warren. That story, likewise, is told in the photos in Figs. 5, 6, 7, 8, and 9. When you understand that the inside of the cage has a framework that is removable, and that the whole side or top is likewise removable, you will realize how easy it is to get the bees out of the cage.

But this is not all of the trick. Both he and Mr. Wing discovered that it is not necessary to use anything more than a thin syrup that supplies both food and water to the bees en route. The container is nothing but an inverted tin can with a small hole in the bottom. It is very difficult to make queen-cage candy just right—neither too hard nor too soft—but very easy to make a syrup that will always be the same. Read the legends under the engravings for particulars.

Another trick is the platform wheelbarrow. There is nothing peculiar about it except its design and that it is just the right height for taking supers off the hive.



13.—This view shows the extensive way in which Mr. Pinard carries on his bee operations. He owns a two-ton truck, and attached behind is a trailer. When he gets ready to move he does it all in one trip, he and his neighbors working together.

Mr. Pinard has a big two-ton truck and a trailer. A man who does a business on as large a scale as he does, must have a complete equipment. Fig. 13 shows that he does things in a large way.

He has set his stakes to raise 10,000 queens this season, and I do not know how

many thousands of pounds of bees. That he will be able to meet his expectation, I have no doubt. Both Mr. and Mrs. Pinard are the pictures of health and strength, as Fig. 1 shows. Their enthusiasm for their work is contagious. One feels as if he would like to hire out to them, for it is a pleasure even to watch them in action.

IN the control of bee diseases Wisconsin is now trying some large-scale experiments, which differ in some respects from the methods used in

other parts of the country. Foul-brood laws are no new thing in the United States or in this State. For over 20 years in Wisconsin and for 30 years or more in some of the Western States, apiary inspection has been carried on and attempts have been made to improve conditions.

Results of Past Failure.

Recently a reaction has taken place, based, in part, on an abuse of power by county inspectors in some parts of the country and, to some extent, on the obvious failure of state inspection to accomplish what was expected. As a result, the situation has been opened for any sort of experiment from a complete abandonment of inspection to the most rigid of area disease-eradication methods. Developments of the last five years in Texas, Iowa, Florida, and Pennsylvania are in point.

Before describing the comprehensive plan adopted last year in Wisconsin, which is intended to cover every loophole in the battle against foul brood, let us examine for a moment the bee-disease situation in the State.

Disease Situation in the State.

The accompanying map indicates in only a general way the plight of Wisconsin bee-

FOUL BROOD CONTROL

What One State is Doing in Cleaning up Foul Brood. Systematic Work Aided by Law

By S. B. Fracker

keepers in fighting American foul brood. Since its introduction in 1870 the disease has spread until infections are now known in practically every country

except a few of the northern ones. More samples of this disease are said to have been received at Washington from Wisconsin than from any other State, and many large beekeepers have lost entire apiaries. A more disheartening situation can hardly be imagined than faces a large honey-producer with American foul brood scattered thru his yards. Many have been the profits turned into losses in recent years from this cause. We read with interest of the publishing of foul-brood infections in other States, totaling one-half of one per cent of the apiaries examined, when our inspectors find 30 to 45 per cent diseased in some countries.

I have outlined the conditions because the plans now being followed are somewhat drastic and expensive. They may not be needed in other places and certainly should not be judged from the standpoint of areas in which a bee disease is a novelty.

Premises Assumed.

The premises on which Wisconsin's policy is based are as follows:

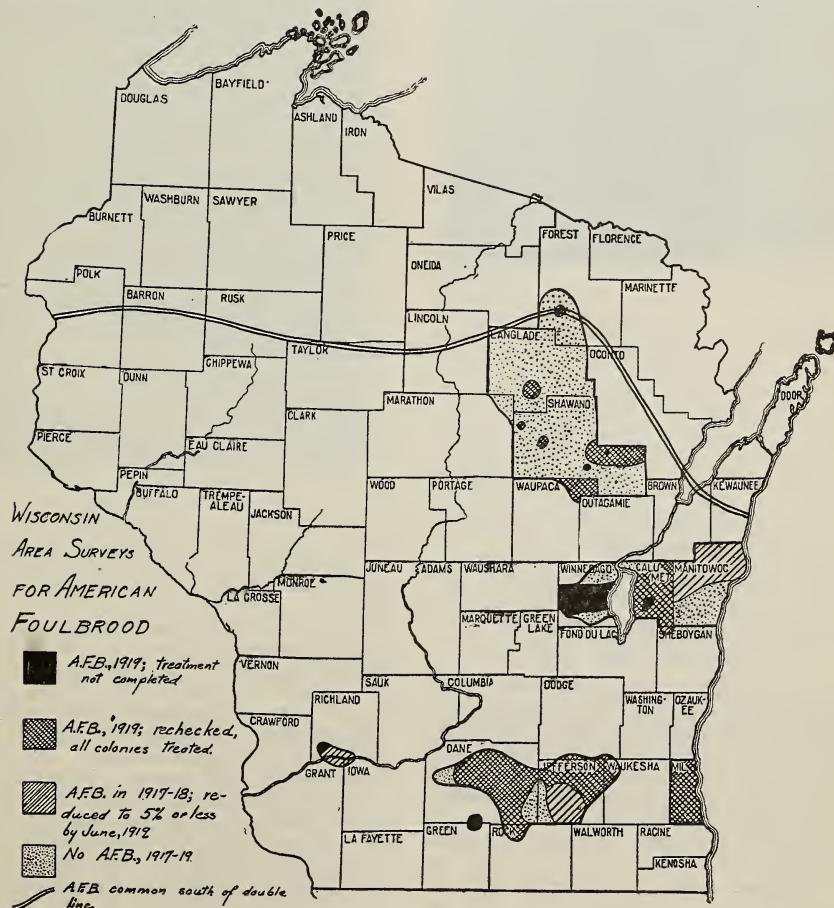
1. The two serious diseases, European and American foul brood, must be handled

- by different methods in attempting state-wide control.
2. The beekeeper can keep his losses from European foul brood negligible by maintaining Italian bees, good colony strength and careful wintering, and by requeening as the disease appears.
 3. The beekeeper can not eradicate European foul brood completely and keep it out by any methods now known.
 4. The presence of European foul brood in a yard may or may not threaten the health of neighboring bees; but, even if it does, the present methods of treatment will not protect the neighboring apiary.
 5. Therefore, the European foul-brood problem, except for preventing transportation into clean territory, is not one for compulsory measures in the present state of our knowledge.
 6. On the other hand, American foul brood is a menace to neighboring apiaries, can be readily transported, and can be permanently and completely eradicated.
 7. The most important means of distribut-

ing American foul brood is the sale and transportation of bees and used bee-supplies.

The first five of these premises have been covered so thoroly by Dr. Phillips in talks in all parts of the country that they scarcely need further explanation. When a method of eradicating every trace of European foul brood from an apiary or a township has been worked out by the government, at least one Wisconsin county, Manitowoc, will be ready to try it out at once. In the meantime the beekeepers of that region are buying Italian queens in wholesale quantities thru their strong local association and adopting the other control measures recommended.

The sixth and seventh points are based primarily on experience with foul brood in Wisconsin, altho they can undoubtedly be confirmed in other parts of the United States. Many an apiary of the State has cleaned up completely and never had a recurrence. Space is too limited to give the evidence we have, showing that the transportation of bees and bee supplies is a much

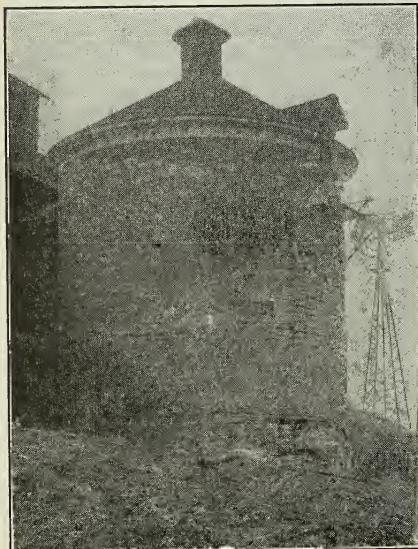


more important factor in the distribution of American foul brood than neighborhood robbing, but the indications are that the latter is principally serious within less than a mile of infected colonies.

Features of the Plan.

The Wisconsin plan of bee-disease control, therefore, includes the following features:

- The area clean-up method of American foul-brood control by covering one county at a time and rechecking it. This



A source of foul brood was found in the walls of this Wisconsin silo. The owner failed to clean out the diseased swarm, and this place became a disease center.

- was begun in 1917 under the direction of Dr. E. D. Ball, now of Iowa.
- The requirement of either a permit or an inspection certificate for each package of bees and used bee-supplies whenever sold or moved either in the State or into it from the outside. Our 1919 statute makes this regulation.
 - Demonstration and educational work to keep the symptoms of, and control methods for, both European and American foul brood in the minds of as many of our 10,000 beekeepers as possible.

These measures are in charge of the State Entomologist's office in the department of agriculture at the State capitol, the first two directly and the third in co-operation with the extension service of the College of Agriculture. They are based on a new statute, which includes several new features in addition to those usually included in inspection laws.

Degree of Success Attained.

"The proof of the pudding is in the eat-

ing." What success has been obtained in American foul-brood eradication? In answering this question, while no apologies are necessary, a failure of the Wisconsin honey flow in 1918 must be understood, resulting in the impracticability of effective treatment (except by destruction) that season. No rechecking was done that year.

In Manitowoc County the per cent of diseased apiaries (A. F. B. only) in 1917 was found to be 31 per cent. In 1918 this had been reduced to 11 per cent; while in 1919 only two apiaries containing two diseased colonies were discovered.

In the southern two-thirds of Jefferson County American foul-brood infection was reduced from 40 per cent in 1918 to 23 per cent in June, 1919, all of which has now been treated or destroyed.

In Dane County surveys were made in 1917 and 1918, but no attempt to treat was made and the infection increased. In 1919, 36 per cent of the apiaries examined were found infected, and with the exception of two or three colonies treatment was applied throughout.

In Richland County the work has so far been confined to the southern tier of townships. Here American foul brood has been wiped out, except in the northwest corner of the inspected area.

In Forest, Langlade, and Shawano counties the condition was not so serious, but disease areas were discovered near Soperton, Antigo, Bonduel, Cecil, Belle Plaine, Birnamwood, and Clintonville. At the last inspection of 1919 no disease was found in these locations, except in three or four colonies located near Bonduel and Belle Plaine.

During 1919 Milwaukee and Winnebago counties were surveyed, the former completely, the latter partially. Every diseased colony in the former county was treated or destroyed. The work in the latter has not been completed.

It should be understood that our southern Wisconsin honey flow is so short that one can not determine the effect of a clean-up campaign the same season. Rechecking is carried on in these counties entirely to see that treatment has been applied. The inspectors then visit the same apiaries the following season, looking for a reappearance of the disease. The results of the 1919 campaign, therefore, can not be determined as yet.

We have recently made a study of the inspection records to learn (a) the results of owners' treatment or destruction of infected colonies; (b) the results of owners' neglect to act; (c) the appearance of the disease during a campaign in apiaries found healthy at the first inspection.

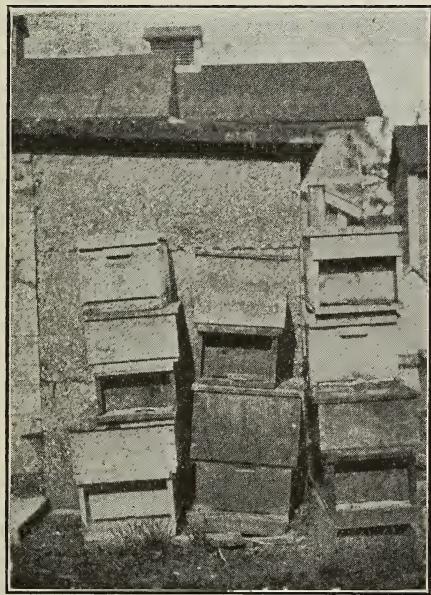
The results in Jefferson County are typical, American foul brood only being considered. During the 1918 campaign, 35 owners applied treatment or destruction to their 108 infected colonies. The 1919 inspection showed that 20 owners had completely freed their apiaries of disease, and that the total

number of diseased colonies among the 15 apiaries originally diseased had been reduced from 108 to 22. In other words, the first treatment was 80 per cent efficient.

As a contrast, the experience of seven owners in the same locality who took no action is of interest. Their apiaries in 1918 contained 98 colonies, of which 12 were diseased. The following spring the total number of healthy colonies had become reduced from 86 to 73 in one season, and the amount of disease had nearly doubled.

In Jefferson and Manitowoc counties, the disease appeared in only two or three originally healthy apiaries during the two years' campaign; but in Dane County where beekeepers are close together, the increase was much more rapid.

Our experience would cause us to recommend destruction of single diseased colonies



In these neglected hives behind a barn Wisconsin apiary inspectors found an unsuspected infection center of foul brood.

in most cases. As inspectors, however, we destroy colonies only as a result of persistent neglect or refusal to treat. In 1919 seven apiaries containing a total of about a dozen colonies were burned by inspectors, but the permission of the owners was secured in every case but one.

In treatment our greatest difficulty is to prevent owners from saving the "super-comb" over diseased brood-chambers and using it again. Several large apiaries have retained the disease thru several successive wholesale treatments by this means. How beekeepers do love the old comb!

Organization for Foul-brood Eradication.

A word as to organization. The State and U. S. departments of agriculture and the

College of Agriculture are co-operating in paying the salary and expenses of an apiary inspector and field agent, H. L. McMurry, who puts in full time on inspection work in June, July, and August, part time in May and September, and acts in an advisory and educational capacity the remainder of the year. From September to May his primary attention is given to extension and organization work under the College of Agriculture. An average of five or six full-time state inspectors are employed for 10 or 12 weeks in the summer to carry on the area clean-up campaigns.

Inspections for the sale and transportation of bees are usually made by local inspectors recommended by county associations and appointed after civil-service examination. About 30 of these will be available for 1920.

A staff of between one and two hundred volunteer co-operators is also being organized to report sales or transportation of bees and used bee-supplies and conditions in their own neighborhoods.

Wisconsin is in the foul-brood game to win. We believe that we are on the right track in combining area clean-up work and restrictions on moving bees with educational and organization activities. Police power is applied thru the Madison office and by state inspectors; local assistance is given by local inspectors.

If these methods fail to bring results, we shall try others until successful ones are discovered. Present losses from foul brood are appalling and compel us to adopt heroic control measures. Fortunately, the work has the backing of practically all the beekeepers, and this support is rapidly becoming stronger.

Madison, Wis.

[It has been claimed that it is impossible for a county association or any other group of beekeepers to meet without at least some reference being made to foul brood, and it is little wonder that they are interested, for the disease is every year gaining ground. This does not mean that the two foul-brood diseases cannot be greatly diminished in this country, but it does mean that so far the right methods have not been used. As long as beekeepers attempt to meet the problem spasmodically and by merely treating individual colonies, just so long will this topic remain a live one among the beekeepers. But as soon as beekeepers sufficiently realize the seriousness of the disease, to organize efficiently for its eradication as the beekeepers of Wisconsin are now attempting to do, then and only then may we expect to see beekeepers gain the upper hand of European and American foul brood. In Professor Fracker's words, "Wisconsin is in the foul-brood game to win." This spirit augurs well for success, and Wisconsin may be certain her undertaking will be closely watched by the beekeepers of the entire country.—Editor.]



EXTRACTED-HONEY PRODUCTION

Gets Increase and 30 to 50 Pounds More per Colony, all with no Swarming

As we are constantly receiving thru the mail so many inquiries as to our hives, methods, and systems, we have decided to select this channel to answer all the questions simultaneously. We would like to say to the beekeeping fraternity that what we are contributing is from our close observation and lifelong experience.

After testing different sizes of hives and giving all the attention we thought the different systems required, we found we could seldom get the same results with any particular hive. For instance, with our 10-frame hives we could get along nicely, build up in prosperous shape for the clover, often two or three stories high, when all at once Dame Nature might pass into a cloudy period for two or three days, and when the earth took on her brightness again the colonies would begin to show the greatest activity. Some years ago we experienced such a season, when in less than eight minutes we had six swarms in the air at the same time. What a jollification! Now some of the beekeepers of today would call this good luck, but we find at this period whenever a swarm issues it means only one-half of a clover crop. If there only could be some means devised that would keep the bees contented, rain or shine, and hold the whole working force in readiness for the clover

harvest! Perhaps it would be well to mention that we sometimes have three bodies high by the 25th of June, and in ordinary seasons add extra bodies as fast as needed.

After giving every make and size of hive a trial we adopted what we call the Business Man's Hive, which is 20 inches square, outside measurements, 10 inches deep, and contains standard self-spacing frames (Hoffman). We are strongly in favor of standardizing everything pertaining to a bee-yard. With a 13-frame hive and a follower we can contract to either 8, 10, or 12 frames if we ever have any occasion to do so. But with our three-banders and young queens, we find that this size is none too large. They always have plenty of honey to back up their brood-rearing and for this reason always surge ahead.

Let me outline a little of our method of handling bees. After settled weather during sweet-cherry bloom, Myers and myself start clipping queens' wings and marking conditions of each hive. We have clipped as high as 75 in a day. When clipping the queens' wings we always select colonies for our breeders. Then June 10 to 15 we start queen-cells from these colonies with choice queens by removing old queens with two frames of hatching brood forming a nucleus, and add one comb of honey and two empty drawn combs and place the nucleus in a new location. We do this with as many as we think we shall require, allowing an average of 20 queen-cells to each of our large hives. About 12 days later we remove



This apiary of Adams & Myers was located thus to fertilize the large orchard shown in the background.

FROM THE FIELD OF EXPERIENCE

our laying queen with two frames of brood from all our strong colonies that we wish to requeen, making a nucleus similar to the nuclei formed earlier. At this same time we give a ripe queen-cell in a cell-protector from a colony made queenless 12 days before.

By this method we have found that it takes away all desire of swarming, and the new queen comes on the theater of action at the beginning of the honey flow, and such vim as it gives the swarm is surprising. If any of the queenless hives have started queen-cells before this protected cell hatches, the bees will destroy them as soon as the young queen emerges. With the young queen present in the hive, with plenty of room (that is, three stories at this season of the year), we are sure the swarming problem has been solved. There will be a short time (about 13 to 15 days) when there will not be much for the nurse bees to do, and seemingly they all pitch in and become workers much earlier than if left the old way. In fact, they hustle like a new prime swarm. Mr. Myers says he is positive we can get 30 to 50 pounds more to the colony besides extra increase and no swarming.

About Aug. 1 we start extracting. At this time we examine the nuclei we made at the beginning of the honey flow, and if they have developed so as to make prosperous colonies by fall, all is O. K. If not, then we give a frame or two of brood to help them up to proper strength. We plan to have all our nuclei build up sufficiently to fill a 10-frame body. These are wintered mostly in the cellar, and the next spring at the time of clipping queens we transfer them to 13-frame hives. Usually at extracting time we have two or three bodies of combs almost solid with honey to extract. As soon as extracted we sometimes divide the old swarm, usually placing most of the brood and one of the bodies and their queen in a new location; the remaining brood is left on the old stand in the lower body, and a new untested queen is given them. At the same time we add an extracting super to catch the surplus bees. After working on this system we have not had a swarm for two years in our home-yard of over 100 colonies.

With this system we have no use for queen-excluders, which, to my mind, hinder the bees and help in wearing them out. In our experience we have found that by using new comb in the third story or full sheets of foundation the young queen will find ample room and will confine herself to the two lower stories.

With our large hive and our locality we are able to connect our system with fruit-growing and make a success with both.

Adams & Myers.

Ransomville, N. Y.

INTRODUCING QUEENS

Methods Should Vary with the Condition of the Colony

When there was a good honey flow all of the plans of queen introduction I tried seemed to be a success; but when the honey flow stopped and I found that some of them failed part of the time, and the rest of them failed all the time, I decided it would be better to learn more about the old system—the one that has been used for many years, but perhaps not well understood.

The Benton cage with three one-inch holes bored part way thru a wooden block is mostly used in shipping queens. One of these inch holes which is connected with a $\frac{3}{8}$ -inch hole leading to the outside of the cage is filled with candy, which is intended to supply the queen and her attendants with food while on the road; and there is supposed to be enough left in the cage on arrival so that it will take the bees of the colony 48 hours to gnaw away the pasteboard that is tacked over the candy hole, eat out the remaining candy and release the queen.

The wire cloth that is nailed on one side of the cage is for the purpose of protecting the queen from the bees, also for the purpose of giving the bees a chance to get acquainted, or rather to give the queen the colony odor, which she must have before she will be accepted by the bees.

To introduce a queen to a normal colony, remove the queen from the hive. Also, the bees that accompany the queen should be removed from the cage. Then place the cage containing the new queen on top of or between the frames so the bees can have free access to the wire side of the cage. If the queen is still in the cage, sixty hours later, push a lead pencil thru the candy, making an opening for the queen to pass out. Place the cage back on the frames and let her majesty go out when ready to. By doing this the bees will have become quiet before the queen emerges from the cage.

As a rule, we are in too much of a hurry to have the queen released from the cage. If she is released a few hours before she completely absorbs the colony odor, she will be balled by the bees. The colony should not be disturbed for a few days after the queen has been released.

When a colony has been queenless from three to five days they will have started queen-cells. Then the queen-cells should be removed before the queen is released.

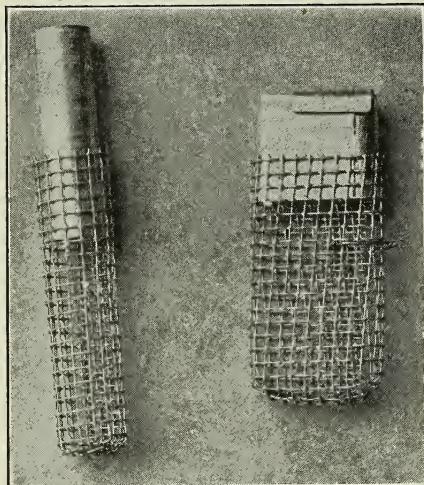
When a colony has been queenless eight or nine days the brood will all be sealed, and there will be capped queen-cells, all of which should be removed and a few hours later a queen run in at the entrance. The reason they accept a queen so readily is because they have, to a great extent, lost

FROM THE FIELD OF EXPERIENCE

their identity and are on the downward road to ruin, and they will certainly be thankful to have any kind of a queen.

Sometimes it is quite necessary to introduce a queen when robbing is going on in the yard. The first thing to do is to contract all entrances, and the entrance of the hive where the queen is to be introduced should be contracted down to an inch or less. If very hot the hives should be well shaded and all cracks made bee-tight.

The cage containing the queen to be introduced should have a cork or plug inserted in the candy hole so the bees can't get to the candy. Leave the cork in the candy hole until the bees quit biting and balling the cage. The cork should then be removed,



All-wire cages as used by Mr. Diemer.

and a pencil run thru the candy, making an opening so the queen can be released by the bees widening the hole. Then place the cage back in the hive, leaving the queen to emerge after the bees become quiet again.

When there is a good honey flow, queens will be more readily accepted than when there is no honey flow, caused perhaps by the great amount of honey in each hive having the same odor.

The Benton shipping cage is used in introducing queens and does very well, because the queen will probably absorb the colony odor as well as she would in an all-wire cage. The worst fault I find with it is, that sometimes the bees fail to gnaw away the pasteboard that is tacked over the candy hole; and even if they do gnaw away the pasteboard, sometimes a bee will get stuck in the candy and delay the release of the queen.

There is considerable advantage in an all-wire cage in which the receptacle for the

candy is large enough to eliminate all danger of the candy hole's being stopped up by a bee getting stuck in the candy, and to have an introducing cage made so there need be no fear as to whether the queen will be released in a reasonable time or not. If the wire cages shown in the illustration are used according to instructions, there need be no fear as to the results.

I have no cages for sale, but anyone with a little ingenuity can soon make enough for his own use.

J. F. Diemer.

Liberty, Mo.

[In our experience we have found it more difficult to introduce to a colony eight or nine days queenless than to one queenless only three days. In regard to the tinned-wire introducing cage used by Mr. Diemer, we would prefer the regular Miller introducing cage, which is thinner and therefore does not cause a bulging of the combs when placed between them. Also, Mell Pritchard reports that in the Root yards it has been found that painted wire cloth is more satisfactory than tinned cloth, since the chemical action between the moisture in the hive and the tinned wire results in the loss of many queens. On taking this up with Mr. Diemer, however, he replies that his cages are made safe for use by dipping them in boiling wax before using.—Editor.]

OLD LETTER BY DEMAREE

Swarm Control Discussed in Unpublished Letter to Lawing

One of our subscribers, S. S. Lawing, while looking over some old letters found one by G. W. Demaree, dated Dec. 26, 1893, which he thought other beekeepers would enjoy reading. The letter is almost entirely on the subject of swarm control. As previously pointed out in Gleanings (page 340, June, 1918) Demaree gave four different plans for swarm control, which have later been improved upon by others. In 1895 in his last plan he advocated raising all the sealed brood above the queen-excluder and leaving the queen below. Altho the plan given in this letter was a little earlier and advised raising all the brood, we are sure it will be of interest since it gives points that we believe were not touched on in his other discussions of this subject. It will be noted that he applied the plan either before or after the swarm issued, and that he used it in the production of both comb and extracted honey. The letter is as follows:

Concerning my method of controlling swarming and keeping the bees together during the honey harvest, I practice it from year to year where there is need for restraint to keep my colonies from dividing their forces at swarming time. I find no plan equal to it in taking honey with the extractor or in taking comb honey, after learning

FROM THE FIELD OF EXPERIENCE

how to feed back to have the unfinished sections finished up. I am sure it works well for taking comb honey.

The operation is performed simply by raising all the combs that contain brood above the queen-excluder, putting empty or honey-filled combs in their place in the brood-nest below the excluder, and hiving the swarm back. If the queen with the swarm is old, it pays to supersede her with a queen-cell. If she is strong and good, just let her alone. The manipulation may be performed either before or after the swarm issues. You give room for all the bees to work by tiering up if the season is good; if not, the bees will surely fill the upper story as fast as the brood hatches out, and in the poorest season, I am sure of one set of combs well filled. If the season is good, I am sure of a paying crop.

When hiving back in this way there is no disturbance. The brood above the excluder assures the bees with perfect safety of perpetuity. Bees never get uneasy at swarming time when they have brood in the hive, whether above the excluder or below it. I pay no attention to the cells above the excluder. The young queens destroy the cells in the usual way, and the surviving young queen is finally destroyed by the workers, if they have a queen below the excluder. I leave all the combs on the hive till the honey harvest is over, and then deal with them as surplus combs. In a warm season, I leave them with the bees to keep them free from moth worms till fall. In fact, I winter my colonies in two-story hives. I would not exchange a plain Langstroth hive, so modernized as to tier up with a square joint, for any other hive. After trying all sorts of frames I prefer the Langstroth hanging frame to any other. They give me less work to handle them.

You are at liberty to write anything you wish about my system. When a good honey season comes and my apiary has the "swarm craze" I would have to just give it up if I could not apply my brood-raising system. With it I can control the craziest apiary on earth and take a paying crop of surplus honey.

G. W. Demaree.

THE LAND OF THE COLD MIT

California Not Appreciated. Believes the South the Center of Modern Beekeeping

Your correspondent Mrs. Puerden has adopted California for her own. She calls it "mine." I, for one, will not contest the adoption. She is welcome to it.

I notice that in her article no mention is made of beekeeping. Here lies the explanation of her glowing eulogy. I feel sure that the favorable impression she carried away is due to her having never mentioned the word, **beekeeping**. Had she done so, she would have met a cold eye, a finny hand, and a gulped-down growl, "Here's another of 'em!"

California doesn't like beekeepers. You may have a round trip in your pocket, but suspicious California doesn't know it. Api-culturally speaking, it is the land not merely of the cold mit, but of the freeze-out.

I am a British member of the craft who made the long journey for the purpose of seeing something of the famous apiaries of that State and studying their methods. I

attended meetings and conventions and heard some interesting discussions, but discovered a certain absentmindedness when I hinted that I should like to visit apiaries. I went so far as to write to one of the best-known beemen, asking permission to visit his yard, but the letter was not answered.

It seems to me that the gold diggers of '49 have gone into the bee business. They have discovered a good thing; they are first in the field; they don't quite know how much gold there is; but they are determined to share it among as few as possible.

But who is to say when the "saturation point" has been reached in any given bee locality? I had no opportunity of studying conditions nor of listening to experiences, but it struck me that California was pre-eminently a field for intensive bee culture. Where one gets two great flows, such as orange and sagebrush, intensive methods offer greater possibilities than in districts where a long even flow is usual. But, so far as I could gather, enormous numbers of colonies with low individual records are the rule, or extensive as opposed to intensive beekeeping. I should be greatly interested to know what could be achieved by ruthlessly intensive methods in the way of feeding back honey, uniting before the flow, etc., in an orange orchard. I venture to think that the result would show that nervousness about overstocked areas is unfounded. "Saturation point" is still a long way off, even with slap-dash, extensive methods.

Altho a little disappointed at my California tour, I feel that I have already discovered some important facts. The true home and center of modern beekeeping is now the Old South. How many Americans know this? Of Europeans hardly any. Californian statistics give a false impression. More carloads of extracted honey may appear in their agricultural schedules, but the last words in queen-rearing, race improvement, bee-transportation, and the finer points of apiculture come from the leading men of the South. Alabama, Texas, Mississippi, and Georgia are now the region where the student can learn more of beekeeping than perhaps in any other part of the world. You will find that the reputation of the Southerner for courtesy and hospitality is no false one. That he is a lazy, shiftless, unenterprising sort of person may, of course, be verified in the advertising columns of Gleanings and the almost unbelievable volume of business that lies behind them.

As for California, I give, devise, and bequeath it, together with all its dusty, tired palm trees, scrimmaging cafeterias, and real estate free lunches, to Mrs. Puerden.

Fitzpatrick, Ala. John H. Protheroe.

[In back Gleanings are several references to Stancy Puerden's husband. Therefore, in this article we have taken the liberty of changing "Mr." to "Mrs."—Editor.]

ON page 265 of May Gleanings, mention is made of the losses of bees in many sections during the past winter. This is most certainly true in this section, and beekeepers have, I believe, lost more than in any one season in the past 20 years.

* * *

It was a treat to read the very interesting article by E. R. Root on the so-called "Long Idea Hive." The evident fairness with which the subject is treated was most enjoyable. After caring for one of Mr. Poppleton's yards for a few weeks I quite fell in love with the hive, that is, for the South, there were so many good points in their favor. However, I fear this article will give a somewhat exaggerated impression of their value as a non-swarming hive. Mr. Poppleton engaged me to look after one of his yards located about 35 miles north of Miami, Fla. All the bees, numbering about 70 colonies, were in these long hives. I went to the yard the fore part of March, remaining about four weeks. There was not much honey coming in during this time, and but few of the hives were full of combs; but there was old honey in the hives, and plenty of fresh pollen to be had. The bees began swarming the day I arrived at the yard and continued to swarm until I left. I presume some 20 to 30 swarms issued during the time I was there. This may be a question of locality only, rather than of style of hive.

* * *

About two years ago somebody called me down for advising the use of the scrapings of propolis from sections for fuel, stating that it well repaid treating them for the wax which they contained. I had my doubts about it, but wished to know of how much value they were for this purpose, and so last fall or winter I treated about 30 pounds of scrapings by boiling in a large kettle of water. After stirring freely I got two and one-half pounds of nice wax, which well repaid me for the extra work. The person who called my attention to my wasteful method has my thanks. Twelve per cent was wax.

* * *

Jay Smith's article, page 275 of May Gleanings, is well worth the careful perusal and study of the amateur beekeeper. The rules he lays down are so simple, easily followed, and satisfactory that they should be put into practice. The swarming box has proved one of the most useful tools in our apiary. If I have a very valuable queen to introduce, I have found no better way than to use a swarming box, shaking a quart or two of bees into an empty box, leaving them for a few hours, and then dropping my new



queen among them. Of course, they must be well fed and queenless. For securing or starting queen-cells it is just as useful. The use of a small bottle for storing royal jelly was a new idea to me, and can be made very valuable. I have tried to keep it in the cells, but it soon dries up in a warm room.

* * *

While the winter loss of colonies has been very large in this section, perhaps the greatest loss will come from the weakened condition of those that remain—small clusters of bees that will be unable to gather any surplus and will require most of the season to build up into respectable colonies.

* * *

On page 286 Mr. Byer tells how a colony was wintered on solid combs of honey in a cellar. He does not state whether the combs were solid with sealed honey or open cells, which might make quite a difference. For one I rejoice in his success, but still have my doubts about the wisdom of such a condition for outdoor wintering. His experience with aluminum combs is interesting; but I need more experiments before I shall be satisfied with them.

* * *

Jay Smith calls attention, on page 293, to Mr. Demuth's method of wintering. In talking with Mr. Demuth last winter about his method, he said there was one objection to it. His bees so packed come thru so strong and build up so fast in the spring that they are ready to swarm before he is ready for them. Some of us would call this a good fault.

* * *

I like that "Advertising Guarantee" printed in March Gleanings. Now that is just what we need, not only in bee journals but in all lines of business. There is no way of telling how many millions of dollars better off our country would be if all advertising was made to come up to the Gleanings standard. What a stimulus to business it would be. I believe that even those that advertise would be far better off, too, in the end.

* * *

In behalf of all the readers of Gleanings, may I thank Mrs. Stancy Fuerden for her vivid account of "An Hour with Luther Burbank"? It seemed almost as good as going to Santa Rosa myself, and a great deal easier.

* * *

If sections to be used as bait sections are scraped down one-half, they will when filled look as well as new ones. It makes a cleaner job to use a sharp knife just bent so as to cut the comb down.

WHEN we finally started home from San Francisco, leaving behind us all the fascinating things we had seen and the many more we wanted to see, there was a regular lump in my throat. Some day I hope to go west, accompanied by my family of course, and stay until I feel satisfied.

However, our boy and I were soon diverted when we approached the mountains and annexed another locomotive to help pull us over "the top of the world" into the State of Nevada. The boy jumped off at a station stop just to be able to say he had set foot in the State; but, not being in the mood for a divorce, not even the speedy and painless variety common in Nevada, his father and I remained on the train.

The next morning found us crossing desert country again, which as it approached Salt Lake grew more barren and yet more interesting. Ever since childhood days I have wished to see a mirage. I would be willing to risk heat prostration by visiting a desert in midsummer when mirages are at the height of their season.

But that day, crossing the barren country which was once a part of the bed of Great Salt Lake, we certainly saw very strange things, and until someone convinces me to the contrary I am going to believe they were mirages. Far in the distance we could see beautiful blue water around the base of a mountain range. The mountains seemed to fairly float in a great lake. As the train bore us nearer, the water gradually disappeared until the mountains were seen rising from dry and barren sand. My imagination is so efficient that I would hardly have trusted my own eyes alone, but our sixteen-year-old boy could see it as plainly as I could, and finally even his unimaginative father admitted he could see that water at the foot of the mountains. We saw this phenomenon again and again, and when we later came in sight of Great Salt Lake itself the only difference between that water and what we had seen earlier was that it did not disappear when we approached and crossed it.

SALT LAKE CITY, where we stopped off 24 hours to take in a beekeepers' meeting, is a beautiful little city, beautifully located in a valley with the most sociable mountains. They are so close to the city that many streets creep up the foothills, and from our hotel windows there was a magnificent "close-up" view of encircling mountains, draped in snow.

Speaking of that beekeepers' meeting, there was an announcement of it on a bulletin board near the elevators in the Hotel Utah. A chance acquaintance told me it

PRISONERS IN A CANYON

Stancy Puerden

first read "Beekeepers' Meeting." She said people would stroll by, read the bulletin, and comment, "What an optimistic set those fellows are."

THE head of the family chose the D. & R. G. from Salt Lake City to Denver, altho he remarked that he never takes that slow and uncertain route when he is alone. Leaving Salt Lake in the afternoon, the next morning found us running rather slowly thru beautiful Colorado mountain scenery near Glenwood Springs. From there we proceeded into the canyon of the Grand River, hugging close to the canyon walls on the right, while the narrow river was at our left and across it were the other walls of the canyon, which varied from almost perpendicular to steep and broken hills. Every turn of the train, and it was turning all the time, showed us a new and beautiful picture. We were enchanted. A Colorado beekeeper on the train told us interesting things about the canyon, how he and his family enjoyed an auto camping trip thru it the preceding summer. You see Colorado beekeepers are so prosperous that they can enjoy fine vacations and many other luxuries. It is a great State for honey as well as scenery.

About this time the train stopped suddenly, and presently it developed that the cause was a snow slide at the entrance to a tunnel just ahead. When the passengers poured out of the train the heap of snow mixed with dirt and rocks looked so big and the few workmen with their shovels so inadequate that it was apparent we were not going to have a change of view for some time.

It was a most picturesque place where we were. There was the tunnel in front of us with the snow slide almost hiding the entrance, and in sight behind us was another small tunnel, little more than a rocky arch over the railroad. The narrow ledge on which the railroad was built broadened at the point where our car happened to be enough to accommodate a little house between the railroad and the river and also a remodeled freight car in which lived two or three girl telegraphers. The tiny telegraph station was on the other side of the track. The whole was dignified by the name of Shoshone. The curves of the canyon make Shoshone seem completely surrounded by the steep hills, with no visible passage out. A light bridge crosses the river, connecting the little group of buildings with the highway which is built on a narrow ledge against the other wall of the canyon.

Diagonally across from Shoshone the canyon walls recede enough to leave a recess in the hills with room enough for a number of tents, and in these tents lived a convict gang, trusties from the state prison who were working on the highway. Before we

left the canyon I learned to think of these men as our fellow prisoners, and from appearances they were just as contented and cheerful as the prisoners in the Pullman cars across the canyon.

TO return to the pile of snow: After a long time, when it seemed that it really was smaller, there was a dull, warning roar, the shovelers had just time to leap back to safety when down came another avalanche, burying the tunnel entrance deeper than ever. This was repeated a time or two more with some variations, and other slides nearer the cars kept things from monotony.

The track was cleared at last and our locomotive was detached and sent on thru the tunnel to attempt to push off some snow which had come down beyond. And then came back word that the locomotive had left the track and was helpless. At this time a locomotive from Glenwood Springs was attached to the rear of the train to furnish heat for the cars. Hearing of the disaster to the first locomotive, with all the enthusiasm of a Don Quixote, number two promptly detached herself, slid by us on a siding, and went to the assistance of her disabled sister. And she had no sooner disappeared thru that ill-fated tunnel than down came another avalanche at our end of the tunnel and cut us off from both locomotives, and then we heard the cheering tidings that a slide on the further side of the tunnel behind us cut us off from help from the rear. Night was approaching, we were without heat, food supplies were running low, there was no water in which to wash, and drinking water was gone in most of the cars. We felt as if we had been cut off from civilization for weeks and weeks, and we began to imagine how beautiful a daily paper would look.

HOURS later in the night a sort of snow plow and wrecker combined managed to get thru from the front, righted our helpless locomotive, dug back to us and went on to tackle the slides behind us and then was disabled itself. Some time during the afternoon of the next day the two locomotives, one in front and one in the rear of the observation car, in which was our section, cautiously inched us along to the tunnel, crept thru it, and then proceeded very slowly. Even the most nervous of the passengers were beginning to relax when there was a tremendous jarring bump followed by more bumps and crashes and we stopped. Our section was clear to the front of the car, and as I turned to see if the roof of the car was falling in I was struck with the unanimously ghastly look of the passengers. When we found we were all alive and uninjured the men rushed out to see what had happened, but from the curve of the road we could see without leaving the car that our poor locomotive lay beside the track with its wheels helplessly sticking up in the air like a disabled monster. The engineer had at-

tempted to drive thru a new snow slide, had struck a hidden rock in the snow, the locomotive had started to climb it and toppled over.

But it was one of those accidents which we term fortunate. In spite of the fact that an agitated passenger told us the fireman was killed, he was uninjured as he had happened to be on the engineer's side and had clung to it. If the locomotive had gone over in almost any other place it would have landed in the river. The rear locomotive had dropped back some time before. The trainmen told us if it had been pushing, the train might have buckled and some of the cars have been pushed over into the river.

OUR new location was also beautiful, but somehow the passengers all seemed to feel rather fed up on canyon scenery. I always did prefer mountains only on one side, and hereafter I don't intend to go out of my way to see any canyon less than the Grand Canyon in Arizona.

That evening we dined late, and our dinner had about as many substitutes as we used during the war. The only drink obtainable was coffee. I suggested that they made coffee in order to sterilize the snow water, but the head of the family gave it as his opinion that the water was all converted into coffee to hide the fact that it was dirty. Well, it was liquid and hot and comforting anyway.

By this time the lights were very low and the spirits of a couple of women in the dressing room were so much lower that after a hasty and unsatisfactory attempt at cleansing face and hands in cold cream in lieu of the missing water I crept into a cold and almost dark berth and endeavored to place my various articles of clothing where I could locate them in the dark. Those same women refused to undress and go to bed because they had heard there was a chance of our being rescued and starting in the night.

Just before daylight we did start. It wasn't reassuring to think that any moment a portion of that snow blanket on the mountains, loosened by sudden warm weather, might come down on us in a destructive avalanche; but this time we kept on and on, past four or five trains, held up by our troubles, on into beautiful Eagle Canyon, doubly beautiful to us when we learned that snow slides are unfashionable in that locality. You see the mountains are cut on a different pattern, more goring you might say.

AFTER we had climbed over Tennessee Pass and come out into the glorious view of Colorado's 50 wonderful snow-crowned mountain peaks we were rewarded for the anxiety and discomfort of the past days. Years ago I had seen that view of the mountains, and I had been secretly wondering if my memory hadn't been playing tricks on me. I felt that those mental pic-

(Continued on page 376.)

SUCH an ill-spring! One disastrous period has followed another, ever since that un-easter-like Easter Sunday when the wind rose and the thermometer fell and the whole earth shivered thru her garment of peach bloom and plum petal. During the cold dark days following, while the bees could not get out to the blossoms, we wondered anxiously about conditions in those quite too light hives we had moved a few weeks before. On the first possible day I went thru them. Hive after hive had not an ounce of honey, some of them actually not a cell. In some cases the bees themselves were quite evidently weak, crawling around pitifully on dry empty combs. In several hives they had begun dropping to the bottom-boards. In one colony more than half of them had already dropped off, and the great heap was shutting off all ventilation, so making even more certain the death of their still surviving comrades. Almost despairingly I gave these worst ones a little honey from colonies not yet so despairingly depleted, tho by no means able to spare it, being decidedly short themselves. Then we bought sugar. One hundred pounds doesn't go far, yet with it we undoubtedly tided about 20 colonies over a critical period. It meant giving them at least a chance for survival. A few days later apples and cherries came into promising bloom, and a day or two of good weather meant another chance. But after two good days of nectar-gathering, came cyclonic rain and storm and every blossom was dashed off. Another cool rainy spell, and again we bought sugar and fed—paying \$23.00 for it, by the way, where it had cost \$18.00 a week before. Now (May 7) black locust is in bloom, fully two weeks late, and again weather conditions are unsettled, with the bees getting far less than a full chance at the nectar during these days so dark and clouded. Worst of all, white clover is coming into bloom on time, and the bees are in no wise ready for the flow. Brood-rearing has been so seriously checked that most hives had no more brood on the first of May than at the end of March. Unless the clover has an extended blooming period, there will be little or no surplus honey. To avoid disappointment, I, for one, am counting on none. (And secretly hoping to be mistaken!)

But there are many beekeepers who face even a worse situation than ours, as they have actually lost a heavy per cent of their colonies. While ours are seriously weakened, we have saved all but the one that perished in February. Even beekeepers like Mr. Buchanan, who practice leaving more than enough stores, have felt the severity of this spring; yet their bees have, of course, been able to come thru this experience far

Beekeeping as a Side Line

Grace Allen

ahead of others. In our own little home yard there was a wealth of honey in each hive, and there conditions are now more nearly normal. We really extracted

more closely there than in the country yard, too, but there was a sufficient flow during the late summer to keep up brood-rearing and also to allow an accumulation of stores; so when the fall flow proved so disappointing, there was no shortage. We really thought we had left ample out in the country yard, but were evidently depending too much on that elusive fall flow. As winter came on we realized that those hives were too light, but conditions were such that we decided to risk it. Now we are paying the penalty—an unusually heavy one, as this is an unusually bad spring. Hereafter, when extracting, we shall act as tho there were to be no fall flow at all; then if there is, there can be another extracting.

High winds make tragic conditions for our bees. We have all seen them coming in, wind-tossed. One day lately I watched them for some time; there may not have blown a tremendous wind, yet it was what the bees and I would call a very windy day. Heavy with nuggets of golden pollen, or nectar from the orchard blossoming to the west, they were buffeted roughly about as they curved swiftly down to the entrances, many of them landing on the ground and crawling wearily about seeking the entrance. Some of the hives had been set on bricks, and often the bees wasted valuable minutes, directly below the entrance, crawling back under the hive between the front bricks. So I left off my lazy watching, to fix them up some improvised runways from the ground to the alighting boards. These may not be worth while for the big producer to bother with, but certainly the sideline bee-keeper ought to provide every hive with boards slanting from the ground to the entrance, unless he has wide alighting boards.

Between the objects of the backlotter and those of the big producer there stretches a wide difference. The backlotter may have obtained his first hive by accident, and continued with it because of a wakening interest; or he got it for honey for his table, in the same spirit as he got his Rhode Island chickens or his onion sets or his Golden Bantam seed corn; or he got it just for the sheer unadulterated delight of a fascinating outdoor hobby. Probably both the honey and the pleasure form the double-barreled object of most sideliners. Part of them will say, "Oh, I keep bees just for the fun of it—and then we like the honey, too"; and the rest will say, "We're such a honey-eating family, we like to raise it ourselves, and have a little left over to give to our friends and neighbors, too—and then we enjoy hav-

ing the little rascals around and working with them." There lies the object of practically all backlotters, pleasure and honey, or else honey and pleasure. Money, which is necessarily the ultimate object of the commercial producer, is doubtless a prime factor among only a few backlot beekeepers, at first. Later, if skill or location, or a happy combination of the two, makes a back-lotter realize what he might attain with bees, he often ceases to be a simon-pure backlotter, and passes quietly into that class who are in the transition stage, with big production as their goal.

This contrast between the aims of the sideline beekeeper and the big honey-producer is what accounts for, yes and justifies, the difference in their methods. The man who expects to produce honey by the ton, by the carlot, must make every minute and every motion count. He will "examine" 75 or 100 or more colonies in a day. The back-lot beekeeper will hover over one hive for half an hour or longer. He has much to learn; much to enjoy in the learning. There is the queen to watch as she moves across the comb, the depositing of the eggs to be noticed, the concentric arrangement of the brood to be observed, the brushing-off of pollen from the workers' legs into a cell to be noted, and all the other marvels of the hive to become familiar with. While doing all this, he is attaining his object—enjoyment, as the quiet, spirit-refreshing hours pass over him, shot thru with sunshine and birdsong and the humming of the bees.

Or, starting out to "examine" his hives, rather than to observe their workings, he counts his combs of brood, taking each one out in turn, searching painstakingly for queen-cells, noticing his incoming honey, slowly deciding what to do next; enlarge or reduce his brood-chamber, raise brood, give supers or take supers away. While the big producer has reached his conclusions, perhaps, by the drawing out of a single comb of brood, its size and general appearance serving his alert and experienced mind as an index to the conditions thruout the hive; or he may merely raise the cover and look down in without taking out a single comb; or he may look only at the entrance and say, "We'll give more super room here."

Yet generally he has reached his present stage of quick judgment by the sideliner's route. Perhaps as a boy in his father's bee-yard, he spent long busy lazy vacation days watching the bees outside the hive and in, and "helping Dad"; or he, too, may have had bees first as a sideline, an avocation that brought him so much of either interest or success (probably both) that he has since made it his real work. Great oaks, you know, must have—and that without exception—the oft-remarked little acorn beginning.

All sideline beekeepers will not choose to take up honey-production as a main work. One will prefer to go on with just a few

bees humming among his flowers and trees, his pets and enthusiasm; he will be a sort of bee-fancier. I recall one such who wrote me once of his great delight in his bees, yet adding that he could not understand at all how anyone would want to keep bees for a living. Another may be so accurate an observer, so painstaking a recorder, so good a reporter, that he comes to be widely known as an authority on bee behavior. There are several such, well-known, who have never made beekeeping a main work. Yet there will always be some, and right now there are undoubtedly many, who catch the fever of honey production on a large scale. And promptly they pass into that growing class who have reached the transition stage.

* * *

A CHILD'S WONDER-SONG.

The world is full of music, sweet and glad, or soft and low—
I think my baby sister hears it, for her eyes look so.
I know my Mother hears it, for she's trying all the time
To help me listen for it, as I listen for a rhyme.
And how I love a ringing rhyme! And sometimes how it sings!
Then how I listen thru it for the singing heart of things!

The singeingest of all things is a music-throated bird
Like one in our old oak tree, that I've so often heard.
He wakes me in the morning when the grass is wet with dew,
With a song so full of gladness that I'm glad myself all thru!
"Now listen! Listen! Listen!"—seems to me that's how he sings,
"I'm blowing music-bubbles and they fly away on wings!"
Sometimes I wonder if the morning isn't singing too;
Sometimes I stop and try to hear—sometimes I think I do!

Another song I love to hear is buzzing of the bees,
Humming, humming, humming in the clover and the trees,
Packing pollen in their baskets when the plum is white with flower,
Flying round the rosy petals of the peach bloom by the hour.
I've heard their happy humming where the clover blossoms rock.
And I've heard their busy buzzing in a friendly hollyhock.
Sometimes I wonder if the flowers may not be singing too:
Sometimes I stop and try to hear—sometimes I think I do!

Then comes a tiny baby breeze a-whispering a song,
Or bands of rushing grown-up winds that shout so loud and long.
I wonder where they come from and I wonder where they go;
I wish that I knew all the places that the winds must know.
They blow across the ocean and they blow across the land,
Singing all their wonder-songs to folks that understand.
Sometimes I wonder if the stillness might be singing too;
Sometimes I stop and try to hear—sometimes I think I do!

And then I wonder up, away beyond the yellow light,
To where the sky is blue by day and O so dark by night.
I wonder if the silver stars may not be singing too;
I'm listening right now to hear — and O I think I do!



FROM NORTH, EAST, WEST AND SOUTH



In Southern California.—The weather during the orange blooming period has not been very satisfactory. Day after day it remained cold, cloudy, or foggy until well toward noon. In many instances the bees during each day would get only two or three hours of flying weather. This condition has prolonged the blooming period and has given the weak colonies a good chance to build up. Of course, better weather has prevailed part of the time and, all in all, it is probably an average year for orange honey. The trees have been in full bloom now (May 3) for over a month and will likely continue one or two weeks longer, unless the weather should turn very warm, which condition always hastens the dropping of the blossoms. There are various estimates of the amount of orange honey likely to be produced this season, but the writer would venture to say that if an apiary averages 60 pounds per colony, Mr. Beekeeper should be satisfied. In many instances the making of increase has not been very successful. There has been much trouble with the bees' not staying with the nuclei, often leaving frames of brood to chill.

The extracting of orange honey has been going on for some time. We have been extracting enough well-ripened honey to relieve the congestion in the hives and to discourage swarming, but have been leaving the unripened honey on the hives. If an apiarist has enough combs to hold the orange-honey crop, it is an ideal way, as it happens so many times that two or three supers will be filled with thin nectar, and none of it will be ripened enough for the bees to cap it over. When ready, they seem to seal over two or three supers almost as quickly as one. Be sure to keep plenty of supers on the strong colonies, as they are the ones that bring up the average in production.

The black sage is putting out a great second growth, which promises well, and is yielding honey quite abundantly in favored locations. The wild buckwheat is showing a good growth, but it also shows the effect of the last two years of drought, and many bushes are either dead or partly so. The wild alfalfa is blooming profusely and is yielding well. The apiaries on the wild ranges in general are doing finely—in fact, better than at any time in several years.

Beekeepers who have for years produced comb honey have turned to the production of extracted, until now one can travel for days and find scarcely an apiary run for comb honey. Prices are not yet fixed, but many beekeepers are of the opinion that the white extracted should bring at least 20 cents per pound. The old crop is well sold out, the State Exchange, I understand, having cleaned up all of its 1919 crop.

It is reported that the San Bernardino County Club has been called upon to pay

a reward for the arrest and conviction of parties who were caught stealing from the apiary of a member. Several of our county clubs have offered a reward in addition to that of \$50 offered by the State Exchange for the conviction of any one found stealing or otherwise molesting the apiary of a member. This, I think, has had a very beneficial effect, even tho there have not been many convictions. Our trouble has been to keep the notices up. Vandals will shoot or tear them to pieces, and so far we have not been able to catch them at it.

Such wholesale swarming has not been reported in years. Every rancher who cares to take the trouble to hive them has from one to a dozen colonies. It is hard to account for this condition, for in many instances a colony would swarm with only five or six frames of brood and with empty space in the hive body.

One of our apiaries is located so that part of the colonies are very much in the shade—especially in the afternoon. These colonies often become so cross that it is necessary to change over and work the colonies sitting directly in the sun. This has been a long-disputed question, and I am about convinced that the colony sitting directly in the sun will get the most honey, and will be much more easily handled.

The beekeepers of California have a rare opportunity to place an exhibit of the bee products of the State in the Exposition Park Building in Los Angeles. C. A. Shirm, care of the Miller Box Manufacturing Co., 201 North Ave. 18, is chairman of the committee appointed last winter by the State Beekeepers' Association. If the beekeepers of the State will send samples of honey to him, he will see that it is properly placed. Send about a quart of extracted honey with the name and address of the producer, the source from which produced, and also the locality where made. Don't forget the choice comb honey, too. Please send it by express, collect. Let all help to make this exhibit a credit to the beekeepers of California.

Corona, Calif.

L. L. Andrews.

* * *

In Iowa.—Thru the efforts of the county associations there are in process of establishment demonstration apiaries in the following counties: Chickasaw, Emmett, Hardin, Johnson, Mills, Pocahontas, Pottawattamie, Scott, and Van Buren. These apiaries are to be established and maintained in the county as a means of co-operating with the extension activities of the College. These apiaries will serve as a silent teacher to the beekeepers of the county and will give the beekeepers a chance to see the value of modern methods of beekeeping. In many cases the summer meeting and field meet will be held at these demonstration apiaries. The value of these dem-



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onstration apiaries will soon be realized by every association in the State.

The cold, backward spring weather was very discouraging to beekeepers everywhere. At this time dandelions have not bloomed and nothing has been gathered from fruit bloom. In this vicinity the season is fully three weeks late. This will mean that the building-up period will be greatly reduced, and therefore extra care will be needed to put the colonies in the best condition for gathering the main honey crop. The weak colonies, which are so numerous this year, will not have the usual opportunity to make a good record. The bright ray of hope, tho, is the excellent prospects for a good flow from clover. This source of surplus honey has been very short during the past two seasons.

Honey has been in demand locally since the tremendous jump in the price of sugar. Those who are having trouble in disposing of their honey still persist in determining the size of package in which it shall be sold. The consumer wants the honey in a package to suit his fancy, the difference in cost not being a major consideration.

The present demand for honey and the general crop conditions are causing some to consider the matter of a fair price for honey for the 1920 crop. The early opinion is that the price this year should not be increased over that of last year. However, the high price of sugar and the heavy loss of bees will tend to increase the price. Of course, sugar might return to a low price; there might be an unusually large crop of honey; and the market might be flooded with the remains of the 1919 crop, but we hardly think the price of honey will be lowered by these factors.

As a matter of maintaining price levels and standards, more attention must be given to marketing. More honey should be disposed of locally. This does not mean that honey sales should be restricted to people within a town, or even county. But the producer can perfect his disposition of sales by direct communication with the consumer. A means of increasing sales that is untried by most beekeepers is advertising, yet experience has shown conclusively that advertising will do for honey what it is doing for every other product that is today offered to the consumer. To want honey people must know about it, the consumer must be given the information, they will not search for it.

F. B. Paddock.

Ames, Iowa.

* * *

In Ontario.—Since sending in my copy a month ago, we have been treated to four weeks of very cool and somewhat dry weather. There have been only a few days in which bees could fly at all, and, of course, hardly any pollen has come in. Bees are backward, as a rule, and

I should estimate that they are only 75 per cent efficient, as compared with a month ago. No, 25 per cent of the colonies have not died, but I think they would average 25 per cent weaker. Clover wintered so well that it stood the adverse weather all right and is now looking good. However, it is very backward, which is perhaps a good thing, as it will give bees a longer time to build up for the clover.

Altho sugar is now very high, and dealers report a big demand for corn syrup, yet I am sorry to say they report honey sales as being very slow. Why this is the case I am at a loss to know, unless, as already stated in former issues, honey in small quantities is too high in price for the average consumer. At least they *think* so, and as long as they are of that mind it makes little difference what we beekeepers think about the matter. Educating customers to buy in larger quantities and at lower prices than they pay for the small packages seems to be the logical conclusion we must arrive at if we wish to be fair in the matter.

Mention was made in the last issue about the aluminum combs I have in one colony. As intimated, the weather has been very cool for the last four weeks, and these two combs were in a hive with no packing, except that there were newspapers as well as quilts over the tops of the frames, and all covered by a water-proof telescoping cover; so naturally it was a pretty good test to prove if the bees did really object to the metal combs in cool weather. About twice a week during all this cool weather when nearly all the mornings were below the freezing point, I would lift up the cover and take a peep at the clustered bees. The same condition was always noticed—bees were jammed in solid from one end of the hive to the other, but all on the four combs at one side of the hive, the side of the hive enclosing one side of this long narrow cluster, and the first aluminum comb being the dividing line on the other side. Yesterday (May 6) it was warm and sunny and the bees were carrying pollen nicely; so I proposed to have a look inside and see how things appeared. Bees in other hives near this one with aluminum comb had brood in from three to four combs; but brood was in the front end of the hive mainly, since clusters, as all know, usually expand from front to back of hive, especially if colonies are only of medium strength and in unpacked hives. This was the condition of all we examined that were on all-wax combs. But on opening the hive with the aluminum combs I found just what one would expect, after seeing the long cluster at one side of the hive week after week, even when the weather was quite cold. The first comb next to the hive side had honey and a little fresh pollen in it but no brood. The next two combs were practically solid with brood

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from one end of the hive to the other. The fourth comb had some pollen in it, and the side next to the brood was cleaned out ready for the queen to deposit eggs in it. The next comb, one of the aluminum ones, had nothing but old honey in it; and, of course, the remaining two were just the same. As I stated in the last issue, I have no comments to make, as one hive with two combs in it does not justify too hasty conclusions. But one thing is sure, the bees in that particular hive have no use for aluminum combs in cold weather.

J. L. Byer.

Markham, Ont.

* * *

In North Carolina.—Eastern and central Carolina beekeepers are in the midst of the swarming season when the old-time gum and box-hive bee-men are just hiving swarms, and those using modern equipment and standard methods are "running thru" their hives cutting queen-cells and getting supers placed for the approaching main honey flows. Indications now are for an excellent season. The early flora is yielding in special abundance, bees being able to store honey very-much more rapidly at this season than has been the case in many years.

The State and Federal co-operative extension service for the improvement of methods of beekeeping in this State has been especially active for several years now. In the southeastern section of the State, notably the lower Cape Fear region, there is taking

place especially marked improvement in bee culture, especially in changing from the old gums to the standard hives with Langstroth frames. And this improvement is largely due to efforts of the Government bee specialist, C. L. Sams, who is going into every quarter of the State demonstrating and lecturing on modern methods in bee culture.

A notable undertaking of the kind was the transferring of about 150 hives from the old gum to the improved hives at the D. G. Kelly apiary near Caintuck Landing, 31 miles up the Cape Fear River. This apiary was purchased last fall from Mr. Kelly by W. J. Martin and is one of the chain of lower Cape Fear apiaries that Mr. Martin is establishing. This transference, which required six days, is the biggest undertaking of the kind on record in this State.

In transferring the bees the old gums were turned upside down and the bees drummed out and dumped into the new hives, with full sheets of foundation and specially prepared frames of brood, the new hives being placed just where the old gums had been. Then the old gums were taken to a bee-proof tent where the brood comb and some honey were fitted into frames and hung in the new hives, other frames with full sheets of foundation being added to fill the brood-chamber. Surplus choice honey was placed in containers for home use, and that in old and dark combs was dumped into barrels to be fed back to the bees just after the honey



The D. G. Kelly beeyard, lower Cape Fear apiaries, showing the greater part of the yard after the bees were driven from gum hives into Standard hives placed on the old stands. In order to minimize confusion among the bees, the new hives had to be placed for a time just where the old gums were; so the arrangement is not what it should be to avoid drifting.



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flow when the colonies are to be doubled in number. There was a great amount of old combs not yet filled with honey this season that went into a huge pile to be later rendered into beeswax. Mr. and Mrs. Kelly are greatly interested in the improvement



A few of the huge "gums" from which the Kelly bees were transferred to Standard hives. The barrels contain the lowest-grade honey to be saved for bee feed. The shack in the rear was occupied by Mr. and Mrs. Sams during the week of transferring.

brought about in their old gum apiary, and both will assist in caring for the colonies now in modern hives.

The Caintuck section is noted for its honey resources and for its great number of owners of gum-hive beeyards. Mr. Sams believes that the establishment of this thoroughly modern apiary in the heart of this region will have the effect of greatly quickening the interest in improved methods of bee-keeping, and that before a great while gum hives will be decidedly the exception, thereby multiplying many times the honey production of this section. Mr. Sams is now in the northeastern section of the State making demonstrations in this same work of transferring bees, in co-operation with a number of county agents.

Baleigh, N. C. W. J. Martin.

* * *

In Texas.—The weather for the past month has been very unfavorable; very little rain has fallen in the State; very dry weather, accompanied by high winds and northerns, have given the bees a very severe setback. Feeding is the order of the day, and where not done many stands of bees have starved. In southwest Texas the bees are making a bare living, in the central portion conditions are better, but north and east they are far below normal. The same weather conditions are holding the honey plants back. Where the frosts of last month killed back many plants, now new flower buds are just ready to open. This is true of mesquite, honey locust, dewberries, and others. Texas beekeepers are

a very optimistic class; while reporting the above adverse conditions they are unanimous in the belief that the prospects are yet favorable for a normal honey crop, and that a week of good weather will bring on a heavy honey flow.

The shipment of queens and bees in combless packages has started off nicely. The cold weather has retarded the rearing of queens somewhat, but most of the queen-breeders are able to fill their contracts on schedule time. The fact that the spring is backward in the North is a great advantage, as buyers are asking that shipments be held up until warmer weather. Shipments of combless packages as early as April 15 were successfully made.

The whole cotton-raising portion of the South is interested, as never before, in cotton. The relationship of this plant to the pink boll worm, the boll weevil, and the honeybee are subjects of the everyday conversation of farmers, business men, and entomologists. Today, as the planters are planning to test the methods of Coad and Newell for boll-weevil control by means of the application of arsenates in the powder form, the beekeepers are asking what effect this poison will have on the bee. I am forced to say I can not give the least information. Plans are already made to dust many acres of cotton in Texas, and the Experiment Station is planning to gather data on this subject, including the action of the poison on the honeybee and the supposed storage of arsenates in honey.

The queen yard of the Experiment Station apiaries has been able to distribute its first queens. One of the objects of this yard is to put good queens in the hands of farmer beekeepers who have black or hybrid bees, and thus improve the bees of the State as a whole. To do this, a ruling was made to send out but a very few queens to one party. Notice of the distribution of the queens was made thru the farm journals of the State. In 14 days after the notice was put out, over 100 applications were received. Of this number, three-fourths were farmers whose names were not on our list of beekeepers. These men are interested in the general betterment of farm work and are in the process of putting the bees in proper shape.

County Agent O. S. Gray of Ellis County is an enthusiastic beekeeper. Among his other farm organizations is a boys' bee club of 15 members. These boys own from one to seven stands each. Most of the boys are entering their second year of bee-club work. As an incentive to better work each one of these boys will receive an Italian queen, the gift of the county agent. At the annual boys' club fair this fall the bee section will have an exhibit.

When cold and drought put an end to the



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blooming of the early spring flowers the first of the month, the prickly ash came to the rescue of the bees. This tree (*Xanthoxylum clava-Herculis*) is very abundant in Texas east of the Brazos and not uncommon elsewhere. It blooms from the middle of April till the middle of May. The nectar flow is abundant and surplus from it is common. Had not the drought stopped the blooming of the other spring plants, there would have been a surplus this spring. This plant belongs to a famous nectar-bearing family; the prickly ash of the East (*Xanthoxylum americanum*), waffer ash (*Ptelea trifolia*), Celina (*Xanthoxylum Pterota*), and all of the citrus trees are included in this, the Rue family.

H. B. Parks.

College Station, Tex.

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In Florida.—During the last few months some bee journals have been advising beginners to hive all swarms on drawn combs or on narrow starters only, in preference to full sheets of foundation. The Dadants tell us we can give the small swarms full sheets, but the big ones must have only starters. The reason advanced is that a big swarm will weight down and stretch a few rows of cells at the top of the frame, and a small area of drone comb will be the result. Mr. Wilder, in his Southern Bee Culture, gives the same advice, but for a different reason. He contends that the big swarm is equipped for comb-building and will build the combs from starters as well as from full sheets, while a small swarm needs the additional help that full sheets of foundation will give. While I do not wish to criticise the writings of men who have had far more experience than I have had, I do wish to register a protest against such advice being given indiscriminately. Such practice may be satisfactory in some localities, but in Florida it will not do at all, and will only result in many would-be beekeepers' wasting the energy of their bees in building a worthless set of combs that will have to be replaced later under less favorable conditions. In Florida most of the swarming occurs during the orange bloom, when the yield may be from five to fifteen pounds daily, and a big swarm will build a set of combs in two or three days. If given only inch starters, the result will be 50 per cent drone comb.

It is easy to say "use drawn combs," but no beginners in Florida ever have any drawn combs for the simple reason that moths destroy a comb in a few days, and, even if they had them, it would be best policy to use them in extracting supers. To take a frame of brood from the colony that has swarmed and place it in the new hive for the swarm to cluster on, filling out with full sheets of foundation, is first-class advice for

the benefit of the swarm, as it will be a sure preventive of absconding; but the theory that the weight of the bees will center on the given comb does not apply when anything but a very small swarm is considered. The only advice that should be followed by beginners is simple and has been given repeatedly. No one can afford to fool with starters, for, with a frame properly wired and filled with medium brood foundation, there will be so little sagging that it will not pay to take the risk of using anything else.

The year 1919 was one of the worst seasons Florida has experienced. With the exception of the Apalachicola region and a few favored locations in the South, there was no honey flow after the orange, and heavy feeding was necessary during the summer and in the fall. Cabbage palmetto did fairly well where it was plentiful and saved many apiaries from starvation, but the fall flow was a failure almost all over the State. Heavy winter losses were the result, and colonies that were saved were in such poor condition that the best orange flow since 1914 was wasted in the spring for lack of bees. I have often been asked why we cannot build up the bees by stimulative feeding; but when there is no pollen in the hives and none being gathered, feeding is of little use; also, this year the weather was not suitable at the time when feeding would have been beneficial, if we had had the pollen. Stimulative feeding to secure a crop of orange honey is not favored by any beekeepers I have met. It is altogether too risky, even if it were practiced, for there is always the danger of frost killing the bloom. This year there is very little orange honey in Florida, as the cold in March destroyed the bloom in many sections, apart from the fact that the bees were in such poor condition. The crop of orange honey in three years out of four is always made by the bees that are raised during the previous October and November, and it is at that time that stimulative feeding might be beneficial; but our Northern friends, who think they could teach us something, should remember that when we get the usual fall flow the bees will breed without feeding, and when there is no flow there is no pollen to make feeding of value.

Everyone seems to be looking for a big crop of saw palmetto honey, and where it was not hurt by forest fires the prospect is very good. We cannot tell much about it yet, for we have all seen a big bloom give very little honey, and a small bloom give a big crop. Crops are an uncertain proposition in Florida, except the crop of sand flies and mosquitoes, and that is surely a bumper one this year.

Harry Hewitt.

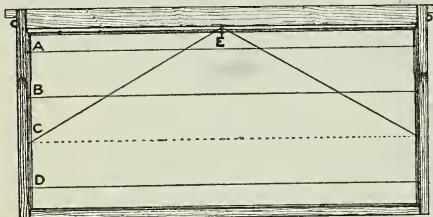
Apopka, Fla.

HEADS OF GRAIN FROM DIFFERENT FIELDS

A Very Clever Trick of the Trade.

One of our men here has discovered a new trick in wiring frames, that is very clever, to say the least. It is very simple, too. Absolutely no change is needed in the wiring-board or the regular standard frames with four holes two inches apart in the end-bars.

The frame is wired in the regular manner with four horizontal wires; but, before cutting the wire and twisting the ends over the tack head, the next-to-the-bottom wire is pulled out so as to leave a little slack. It is then drawn up and slipped over a tack head driven into the rabbet on the under side of the top-bar midway between the two end-bars. The wires are then all drawn taut and the ends fastened.



The next-to-the-bottom wire stretched up to the top bar and slipped over a tack head.

In order to admit of electric imbedding the foundation should be inserted between the three horizontal wires and the diagonals just before the diagonal is hooked over the tack head. This leaves the three horizontal wires on one side of the sheet and the two diagonals on the other. There will then be no "short circuits" and no burning of the wires when using electricity to imbed, because the sheet of foundation will "insulate" the wires at their cross-section.

The only possible objection will be that the next-to-the-bottom horizontal wire will be missing. But there is not any trouble from sagging at this point with the ordinary wiring. Where the foundation needs supporting is at the intersection of the wires near the top and along the lines of the diagonals.

However, if anyone prefers extra support along the dotted line, he can easily insert an extra wire and imbed with a hand tool after the other wiring is completed.

The nice feature of this trick is that it requires no change in supplies, apparatus for wiring, nor for electric imbedding. It takes only about two inches more of wire, and, in our judgment, it is far superior to the old scheme of four horizontal wires. It takes hardly any more time, and we believe it will answer all practical requirements for the non-sagging of a sheet of foundation or comb.

E. R. Root.

Preventing After-swarms.

About 35 or 40 years ago the plan was given out for preventing after-swarms by setting the new swarm beside the old hive and moving the old hive in seven days to a new stand. [Evidently Mr. Deneen intended giving the plan of placing the old hive beside the new one, on the old stand, and tearing down all capped queen-cells and seven days later moving the old hive to a new stand.—Editor.]

I tried the plan as then set forth, but found it entirely unreliable; about one in four or five would send out an after-swarm, doing so with an egg or larva in the queen-cell cup. Because of such delayed hatching of the virgin queen more time was given for the development of field workers, thus causing a favorable condition in the hive for throwing off an after-swarm. The correct method is to look the queen-cells over after the prime swarm has issued, determine the date of the capping-over of the first cell or cells; the seventh day from that date will be the right time to move the old hive to the new stand.

To illustrate, suppose they have delayed swarming three days after the first cell or cells are capped over; in that case the correct time to move the old hive to the new location will be four days from the time the prime swarm issues.

On the other hand if there should be, say, one-day-old larvæ in the cells, the hive should be moved in eleven days after the first swarm has issued.

The cause for the prevention of the after-swarm has been vaguely and erroneously attributed to the loss of a few bees thru their going back to the old stand. The actual scientific reason, however, is due to the fact that the honey flow has stopped in that hive at the time of the emerging of the first queen. With no honey coming in, the instinct of self preservation impels the bees to destroy the remaining queen-cells.

Imlay City, Mich.

C. E. Deneen.

Getting Brood in Outside Combs.

E. R. Root says in his article on wiring, page 79, February Gleanings, that the queen "will not lay in the two outside combs." Why do you say so? and why doesn't she lay there? Some of my queens have laid in every one of the ten full-depth frames, in both sides of them, and this is away up in Canada.

When starting with bees, and being told that queens never used the outside combs, the idea of a 20 per cent loss of space in the brood-chamber appealed to me as a tremendous one, even tho honey or pollen might be partly stored in the two outer combs. Visions of protecting the sides of the brood-chamber came to me; but, on handling bees

HEADS OF GRAIN FROM DIFFERENT FIELDS

for a time and gaining experience, I found the warmest lining for a brood-chamber is bees, and lots of them. Judging by some apiaries, it seems to be taken for granted that the queen has no use for the outside combs, and nothing is done to encourage her there. As a rule, these frames are full of pollen and honey, and spaced so close to the side wall that no good queen would have sufficient room to lay in the outside of that comb.

My frames are $1\frac{1}{2}$ inches spaced between centers, and there is a $\frac{3}{8}$ - to $\frac{1}{2}$ -inch space between all the outside frames and the hive wall; this is provided for by having a nail or piece of wood projecting from the hive wall to keep the outside frame properly spaced. No followers nor division-boards are used in these hives. The wide spacing on the outside, besides giving the queen room to work, gives space for two or more layers of bees to keep warm the brood that should be there. Should the two outer frames be pollen-bound or honey-bound, they are, of course, exchanged for worker combs when there are seven or eight frames of brood in the hive, and the combs taken out placed at the sides of a super full of combs. This super is now put below the brood-chamber if the weather is cool, and above if weather is warm, to give required room, and also to help prevent swarming.

Hamilton, Ont. John Y. McLeod.

Serious Loss of Colonies.

In February Gleanings mention is made of the Isle of Wight disease. In the summer of 1918 I noticed one of my colonies pulling out some of the bees. They were very dark and shiny, and the abdomen was badly swollen. They seemed to have lost the use of their legs, and their wings trembled. A few of them could fly. On opening the hive I found a good many inside the hive affected. The next season 1919, my neighbors, who were box-hive bee-keepers, began to complain of losing their bees. One man, living about $\frac{1}{2}$ mile from me, had between 50 and 60 colonies; he lost all but five or six. Another neighbor about the same distance away had 60 colonies; he lost all but 10 or 12. A third man had 50 colonies and lost all but three. So you see that the disease was pretty destructive. I was a little more fortunate than the rest, having 41 colonies and losing one. My bees are a good strain of Italians. However, I find I have four or five colonies that are still affected. I shall requeen them in the spring, as that seems to be the best thing I have tried yet. I have been keeping bees ever since I was 16 years old. I am a man of seventy now, and this is the first of the Isle of Wight disease I have ever seen.

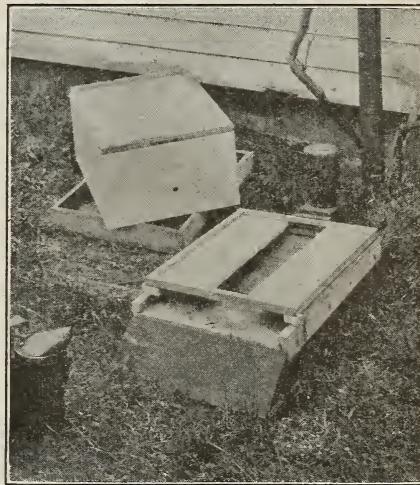
Chetopa, Kan.

H. G. Merrill.

Ventilator for Controlling Swarming.

This swarm-controller is of the same size as an inner hive-cover with an opening 4 inches wide running from the back to the front of the hive. This space will admit, when needed, a Boardman feeder in the back of the hive.

I place the controller between the bottom-board and the brood-chamber, having the $\frac{3}{8}$ -inch space under the frames. As soon as there is a likelihood of queen-cells being started, I pry the hive with the controller, raising it from the bottom-board about $\frac{1}{2}$ to 1 inch, placing blocks under the front corners. This causes a free circulation of air under the center of the cluster. The swarm-controller allows no cool air to make a direct draught on the under side of the outside frames. Because the combs at the sides of the hive are warm, the queen will



Ventilator in place on bottom-board.

expand the brood-chamber. During the warm months the hive and swarm-controller should be raised from the bottom-board about two or three inches or even more, so as to give the bees a place to cluster without hanging out, and an ample space for ventilating the hive.

This swarm-controller I have used successfully for three years in Jamaica, but have tried it out in this country only in a limited way. In Jamaica, the first year I used it, I found that out of 200 colonies, increased during the season to 300, not one swarm issued. The second year, I was late in adjusting the controller and a few colonies swarmed, but after the controllers were put on the hives, all the swarming was done away with.

Medina, O.

J. E. Thompson.

HEADS OF GRAIN FROM DIFFERENT FIELDS

How to Find a Black Queen.

To find or strain out the queen with an excluder, remove from the brood-nest all combs except one of brood, brushing off the bees to the bottom. Put on the excluder, and above it put the hive containing the combs of brood and honey that were taken from the brood-nest. Nearly all the bees will go above, leaving the queen and a few workers below, which in an hour or two will be nicely located on the comb of brood in the lower story. Then the position of the hives is reversed, putting the hive with the comb of brood, queen, etc.,

above where one can easily find the queen, and then return the comb of bees to the bottom hive. There is no trouble finding a black queen in this way. C. E. Corbett.

Currie, N. C.

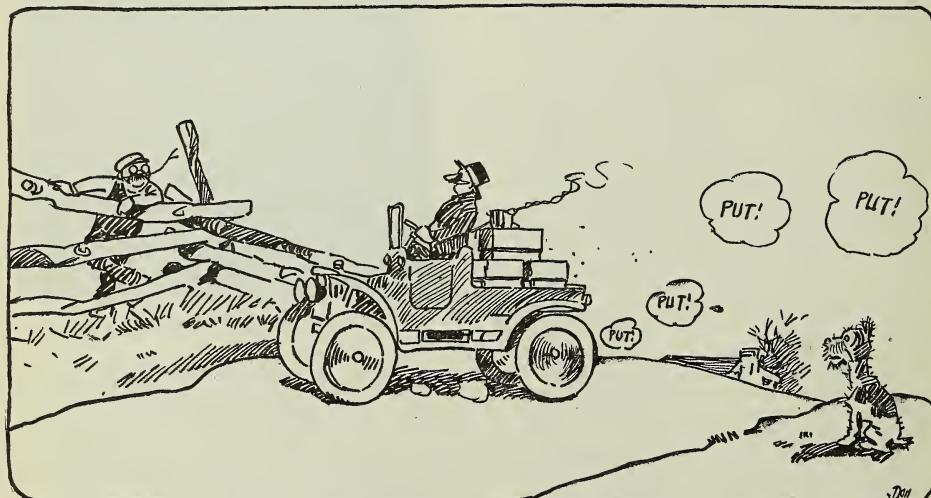
The last word of the article, page 207, April Gleanings, Dr. Kohn says, should read "queens" instead of "bees." In his experience with package bees, he finds he loses about 10 per cent of the queens, and rather than to wait for more queens to arrive he orders 10 per cent extra with the shipment. If not needed, he uses them with nuclei.

Out Apiaries.—By Bill Mellvir

(With apologies to Walt Mason.)

Nowadays we see the master in the apicultural art putting bees on many pastures, sometimes forty miles apart. For he coaxes them from swarming by the latest tricks of trade; so the way they're now performing leaves the old way in the shade. And he has a choo-choo wagon made of bolts and tin and rust, so we never see him laggin' back of horses in the dust. Oh! I see this modern wizard teaching bees they must not swarm! Say, it thrills me to the gizzard just to see

to dater, olden times return to me when I was a swarming hater as I shinned the tallest tree. Words then used I do not mention; they would melt my faithful pen. How I longed for swarm prevention which was not invented then! To the outyard I'd go chasing with an old horse pulling me, who could spend the day in pacing thru the shade of one beech tree. Oh! I wished I had a motor and a highway that was fit when old Dobbin was my toter—cars were not in-



this gent perform. Once a week he looks things over, visits each and every yard, while the flow is on from clover and the bees are working hard. Swarms now look to him like fakers with their rush and roar and hum. Swarming bees are mischief makers—they're the bummiest of the bum. Oh! the soothing satisfaction of a mind at perfect ease coming from such comely action of our modern managed bees. As I watch an up

vented yet. All my better years were squandered chasing swarms and pushing reins; down the weary way I wandered slow as goose grease thru the lanes. Hail the bee-man up to datest who controls the swarming game! Hail the sturdy motor latest with its little tinny frame! Hail the highway smooth and tarry, of its dust and mud deprived! Paths of bee-men now are flowery. Lo! beekeeping has arrived.

QUESTIONS.

(1) In a time of cold weather some of my bees destroyed a lot of drone brood. Will they destroy worker brood at such times? (2) We have had a short flow which is now at an end. Several colonies are killing drones. The main flow starts in three weeks. Will the stopping of this flow have a bad effect on brood-rearing? I mean on the eggs that are already laid. They have plenty of honey.

Arizona.

Burns Wood.

Answers.—(1) If bees begin brood-rearing too early in the spring, and cold weather follows, it sometimes happens that the bees are unable to keep the brood sufficiently warm and that it becomes chilled. In such a case the bees will be found carrying brood out at the entrance. They do not themselves destroy it, but simply remove it after it has already been chilled. If at any time, however, a colony runs short of stores, the bees do destroy the drone brood, and, unless provided with stores at that time, they will also remove good worker brood. (2) When another flow follows so soon after the first one, it is often an advantage to feed colonies a little during this time so that they will continue brood-rearing. If the second flow is of long duration, the brood raised in the intervening period might have time to develop into field workers to gather honey in the second flow; or, if the flow was shorter, the brood might at least develop into nurse bees that could take the places of other young bees that could thus be liberated from the duties of the hive and become field workers sooner than they ordinarily would. Furthermore, if the colony continues raising brood during this period, the brood-nest will be in more normal condition and will not become crowded with honey; therefore, when the honey flow begins, the honey will be stored above where it should be. If there is plenty of honey in the hive but the bees are not fed, the bees will continue raising the worker brood that is already started, but the queen will not lay as rapidly as when honey was coming in.

Question.—If a queen is not mated and comes thru the winter O. K., is it possible she will mate in the spring?

Chas. H. Sladek.

Illinois.

Answer.—There is little likelihood that she will be mated. In all probability she will be a drone-layer, altho a very reliable authority reported to us a case in which the queen was apparently mated after this length of time.

Question.—Do bees put more bee bread in combs than they need? Some of my combs are full. I think I shall remove some of it.

Ed. Coates.

Oregon.

Answer.—In some locations where pollen is very plentiful, bees do sometimes store more bee bread than they need, and in some cases it is often necessary to remove pollen

GLEANED BY ASKING

Iona Fowls

from such combs; but before removing it one should be certain that his locality is not such that a pollen dearth might occur before the bees are able to store pollen again. If there is any danger of this, it would be well to keep a few of these pollen-laden combs for use next spring. For, during the breeding season, if the bees are unable to gather sufficient pollen, breeding will be curtailed and the result will be fewer bees for the honey flow.

Question.—In selecting a location for bee culture, what are some conditions best to avoid?

Massachusetts.

Fred W. Stillman.

Answer.—The bees should be so placed that there will be no danger of their annoying passers-by. If it is necessary to place them near a highway, a tall hedge or building should intervene so that the bees will be compelled to fly high above the roadway. A good location would have a windbreak on the apiary's colder sides which are usually the north and the west. A group of trees or a hedge is a better windbreak than a solid fence, which causes the wind to shoot over it and then down upon the hives. A little shade is an advantage in an apiary, but it is better to have no shade than to have too much. Apiaries should never be located next to a field that is to be cultivated, as there might be some danger of the bees' troubling horses when at work there.

Question.—This entire country is covered with live oaks—and such a pollen flow as they are giving this year! The trees are just humming with bees. You can strike a limb a sharp blow and the air will fairly turn green with pollen. The other day while walking around I was surprised to see a number of bees flying along some of the bare limbs that had shed their leaves, and I noticed they would stop and seem to suck at something. When I investigated I found that at almost every place there was a bud, there was a small drop of water, clear fluid, and upon tasting it, it proved to be pure sugar syrup, so thick it wouldn't run. I found one limb about eight inches long that had five large drops on it. I can't account for this, unless it was caused by the buds' being bruised in a light hail about a week before.

John W. Hendricks.

Texas.

Answer.—Often we receive reports of branches of oak trees being covered with small galls from which a sweet liquid flows. In reality these are not galls, but plant insects that have an astonishing resemblance to galls, and the liquid is only honeydew.

Questions.—(1) Which is the better, full sheets of foundation or only one-inch starters? (2) How does foul brood look? (3) If there are two queens in a hive, which one will leave the hive in spring, the old queen or the young one?

Pennsylvania.

Norman J. Lutz.

Answers.—(1) The full sheets of foundation are greatly preferred to the inch starters, for the full sheets result in much straighter, more perfect combs. (2) There

are two diseases called foul brood, European foul brood, and American foul brood. The two are entirely different diseases, requiring quite different treatments. American foul brood attacks sealed cells mostly, the cells being sunken in appearance and showing irregular perforations in the cappings. The affected larvæ nearly always are found on the lower side wall of the cell. Such larvæ are yellowish brown to blackish brown, and, as they decay, have a very offensive odor, becomeropy or stringy, and may be stretched out several inches in a delicate thread. After this stage the dead larvæ dry into hard scales which adhere tightly to the cells. European foul brood attacks unsealed brood mostly. The affected larvæ may be found on any of the walls or base of the cells and are usually a light yellow. This decayed matter may also have an unpleasant odor, but not usually so offensive as in the case of American foul brood. The diseased larvæ reach aropy stage, but, instead of roping as a fine thread, stretch out as a coarse granular thread. When scales are formed they do not adhere tightly to the cells as in the case of American foul brood, but may be removed. This disease attacks drone and queen larvæ almost as readily as worker. If one has trouble in determining with which disease his colonies are affected, he should send a sample of the comb for diagnosis to the Bureau of Entomology, Washington, D. C. For this purpose a piece of comb about five inches square and containing a number of affected larvæ should be sent in a wooden box. (3) When a prime swarm, that is, the first swarm of the season, issues, it is accompanied by the old queen, and there is left for the so-called "old colony," or the parent colony, ripe queen-cells from which will come a virgin, which, after being mated, will become the mother of the colony.

Questions.—(1) Is a smoker necessary in taking the honey out of the hives? Will the bees sting me when I open the hive without bee-veil or gloves? (2) Are strawberry blossoms any good in producing honey? (3) How is the best way to make a swarm of bees light on an object? Suppose I was in the field and a swarm of bees passed overhead, how could I make them light on an object so that I could capture them?

Victor Parolek.

Nebraska.

Answers.—(1) Altho it is possible to open a hive and remove honey without a veil or smoker, we do not advise the practice. When working with the bees the beginner should wear a veil, and should certainly have a smoker ready to use in case it is needed. Usually a puff or two of smoke is a decided advantage. Many wear gloves when they begin beekeeping, but after more experience is gained the gloves are usually discarded. (2) Strawberry blossoms produce nectar, but in small amounts, valuable only for aiding in brood-rearing. (3) If you were in the field when a swarm of bees passed overhead and no water was handy to throw into the swarm, you could probably stop them by throwing handfuls of dirt into the swarm

where the bees seemed the thickest. They would then light on anything handy, or on the ground if no bush or shrub was near.

Question.—Colony No. 1 is an exceptionally good one with an extra-good queen from which I desire to produce some queens. This colony swarms leaving a choice lot of queen-cells. I desire to requeen colonies 2, 3, and 4. Can I remove the queens from these colonies and put queen-cells from colony number 1 in cell-protectors and give one to each of the colonies I desire to requeen?

Pennsylvania.

Geo. W. Meyer.

Answer.—If the colonies are hybrids and especially hard to introduce to, it might be well, after removing the queen, to wait two or three days before giving the queen-cell, but ordinarily it would be safe to give the cell in a protector immediately, provided the cell would not hatch for two or three days.

Question.—Upon recent examination I find many of my drawn combs cracked from cold. Can these be used again, that is, will bees mend them? They were stored in the loft of the barn exposed to extreme winter temperature. Should they have been stored in a warm room?

W. E. Reim.

Wisconsin.

Answer.—It is not necessary to store combs in a warm place. In fact, we always leave our combs stored in honey-houses in which there is no heat whatever. If the combs were empty as they usually are when stored for winter, they would not have cracked because of the cold. But when combs contain honey, they sometimes become cracked in winter and the honey oozes down the comb. We wonder if you are certain those combs were not cracked when you stored them. They may have been slightly broken in the extracting without your knowing it. There is no reason why these combs should not be used. As soon as a little honey begins coming in, it will be found that the bees will readily mend them.

Questions.—(1) Is there any danger of the queen's flying away when one is trying to clip her or put her on another comb? (2) If I cover the frames with burlap next winter, will the bees gnaw it?

Frederick Spiker.

W. Virginia.

Answer.—(1) Yes, they do sometimes fly at such times. When this happens, the best thing to do is to cover the hive so that it will have its usual appearance and then move away from the hive in order not to confuse the queen and cause her to enter the wrong hive. In a short time she will probably return to her own hive. (2) Quite likely, after the bees become active in the spring. More than this, the burlap is so loosely woven that the bees, in their efforts to remove it, loosen from it such long fibers that these sometimes cripple a few bees by becoming wrapped about the feet or body. When this happens to the bees it is a small matter since so few will be thus disabled. But one time one of our best queens was crippled in this fashion. Perhaps this might not happen again for years, but the one experience was enough for us, and since then we prefer a mat of canvas, or, better still, brussels carpet.

EVERY one here seems to have a bee - craze and wants to buy bees. It is a good time to sell. We had late rain here that will bring some honey. This county seems to be a great country for queen-rearing and the package bee business.''-Pat Keating, Santa Clara County, Calif.

"The death of Lewis Cass Woodman, age 72 years, occurred on May 3. He was the father of A. G. Woodman of Grand Rapids, Mich., and had been engaged in beekeeping for over 45 years, keeping as high as 400 colonies of bees in connection with fruit farming on an extensive scale. His first experience in bees was a purchase of 10 colonies for \$150 in the fall of the year, and the next spring they were all dead. He immediately purchased more bees and has been in the business continually ever since that time.''-A. G. Woodman Co., Grand Rapids, Mich.

"Bees in this locality are in the most peculiar shape I have ever known at this time of the season. I have but very few colonies that have any brood at all. All have eggs, and have had them all this month, but if the eggs hatch the larvæ starve at once. I suppose this condition is due to confinement and a lack of pollen. I am keeping about half of my outfit alive with sugar. If it had not been for the sugar that Gleanings obtained for me, this spring would have nearly put me out of business. Clover is in a wonderful condition. The winter loss to date among the small beekeepers about here is 75 per cent.''-A. C. Ames, Wood County, O., April 27.

"Bees are doing nothing here. No good rains since December. Drones all killed off after the last late frost. Queens in colonies not fed have almost quit laying. I am still feeding nearly half of my stocks.''-E. P. Stiles, Travis County, Texas, May 4.

"Because of the unusual lateness of spring and the cold rainy weather that has prevailed during the past few weeks, we are having to cancel many orders that we should have been able to fill if the season had been anything like normal. We are notifying customers of delayed shipments, returning money, doing everything possible to take care of our end, but will no doubt receive some complaints.''-W. D. Achord, Apiarist, Bullock County, Ala., April 30.

"In all my experience with bees during 40 years, I have never seen them in such splendid condition as now. I have 40 colonies and they have from 12 to 20 frames of brood in all the two- and three-story hives in which I have them. I have found frames that are solid sealed brood not only to the top but to the end bars. One frame did not have a square inch that was not solid brood.

BEES, MEN AND THINGS

(You may find it here)

The two- and three-story hives were packed full of aster honey. In fact, when I clipped queens the first day of April I did not see how they could find room to lay as the honey was candied. But they evidently found a way to convert it into brood. I requeen every year with swarming and supersEDURE cells from my best stands.''-S. B. Post, Washington County, Pa., Apr. 26.

"We get large quantities of honey from cotton here. I had one hive produce a surplus of 100 pounds last year from this source. It was a new swarm, hived on full sheets of foundation, and shallow extracting supers with full sheets. It was hived in May and produced this amount of honey from cotton by the middle of June.''-M. F. Fuller, Lee County, Ga.

"The Buckeye Valley formerly had about 12,000 acres devoted to alfalfa in reach of my bees, but the high price of cotton has tempted many. Even my own farm is plowed up and cotton planted, and as cotton is not as reliable for a honey crop as alfalfa, I have been obliged to move a dozen of my apiaries to other locations. Conditions for a good crop of honey look favorable.''-B. A. Hadsell, Maricopa County, Ariz.

"The heavy loss of bees leaves a depressed condition among the beekeepers. At a meeting of the Washtenaw County beekeepers at the apiary of Floyd Markham, north of Ypsilanti, especial interest was aroused by the 50 packages recently received from Alabama, which came in good condition by mail, and as Mr. Markham was prepared to give them excellent care they were already showing considerable brood.''-Edwin Ewell, Extension Specialist of Apiculture, East Lansing, Mich.

"The season is four weeks late and the spring and winter loss is enormous. Dandelion that usually begins blooming the first of March is now just coming out. About all fruit of every kind is killed and many trees also. Peaches, crabs, and plums were frozen while in bloom. This condition extends over Nebraska, Kansas, Arkansas, and parts of Oklahoma and Missouri.''-J. L. Gandy, Richardson County, Neb., May 1.

"Every beekeeper who has any surplus supplies should put in an advertisement and dispose of them. There is such a great demand and supplies are so hard to get that it would be of mutual benefit and almost a patriotic duty to distribute the idle equipment where it is wanted to increase production.''-W. B. Davis, Kane County, Ills.

"It has been a very backward spring and a great many colonies have died thru the country—as high as 70 per cent in some cases.''-R. F. Holtermann, Brantford, Ont.

AS stated in the last talk, the bees should be kept supplied with plenty of stores right up to the honey flow. And it should be remembered that during this season when much breeding is in progress, strong colonies will use several pounds of stores weekly. If colonies need to be fed, we advise feeding a good candy rather than syrup since the bees take it with less excitement and less danger of robbing. And during warm weather just before the honey flow, robbing is easily started unless great care is taken.

If our directions so far have been followed, the beginner will now have strong colonies with clipped queens, at least one good comb of honey, and from seven to ten frames of brood. In case of the strongest colonies, there probably is brood in two stories, the queen having access to both.

In case the beginner has already applied the swarm-preventive measure suggested in our last talk, he may now find that such colonies, because of rainy weather, a scarcity of nectar, or the extra super room given them, have entirely given up their swarming intentions. Possibly, at the end of eight days no queen-cells may be found in the hive, or perhaps queen-cells may be found with a hole in the side of each, showing that, for the present at least, the danger of swarming is over. In this case no increase should be made, for, if the bees can be kept contented without increasing, they will store much more honey.

By this time the packing has probably been removed. If not, it should now be taken off and the colonies should be given a larger entrance by withdrawing the entrance blocks. Colonies are not likely to swarm if they have good young queens, sufficient ventilation, plenty of super room in which to store honey, and enough room in the brood-chamber for the queen to lay without being crowded by brood or honey. But, tho unlikely to swarm, they may do so. Therefore, until all danger of swarming is over, the colonies should be carefully examined every seven or eight days to make certain that all within the hive is in right condition.

Robbing.

Just before or immediately after a honey flow or when nectar is coming in very slowly, bees are constantly on the alert to obtain sweets from any source whatever. If the bees find sweets that have been carelessly left where they have access to them, they will soon get the scent and then will most thoroly search everywhere until they find an opening into the honey-house or other place where the sweets are kept. After they have returned to the hives with their load many other bees join them until soon a loud, high

humming is heard and the air is filled with thousands of bees darting with great rapidity to and from the source of sweets. If the robbing is not

stopped by the beekeeper, there will shortly be a fearful uproar of angry, fighting, stinging bees that will take possession of the entire neighborhood. Such robbing is not only dangerous because of possible trouble with neighbors, but is also very bad for the bees. After they have once enjoyed such an orgy they are more inclined to get started again, and in case there are any weak colonies in the neighborhood they may be entirely destroyed, their stores being stolen and the bees killed by the robbers. Even strong colonies are sometimes overpowered and killed. When the beginner understands the danger of allowing robbing to start, he will, when working with bees, have this continually in mind, and take every precaution to prevent it.

To Distinguish Robbers from Bees at Play.

During the warmest hours of the day, many young bees may be seen at play, flying all about the entrance and making such a commotion that at first glance one might think them robbing, but a closer inspection will show the difference. These bees will be found to be young fuzzy-looking bees. There will be no dark shiny-looking robbers, no fighting nor sneaking, and no challenging of entering bees. The commotion is simply young bees taking their first flight, circling about in front of the entrances in order to mark their locations carefully so that they may know to which hive to return when they take a more distant flight.

How to Prevent Robbing.

If thru any accident honey is spilled on the ground or hive, it should be diluted with water and all traces of sweet removed. Also, if it is necessary to remove any combs from the hive, they should be placed in an empty super and immediately covered with cloth.

When opening colonies during a dearth, but little smoke should be used since the smoke leaves the bees in a more defenseless condition, less able to resist robbers. At such times weak colonies should be left with contracted entrances and their hives should not be opened. The beginner ought never to open hives when bees show a tendency to rob; but, if it is absolutely necessary, let him use a cheese-cloth or netting bee-tent, just large enough to place over himself and the hive.

To Stop Robbing.

If the case of robbing has just started, the entrances should be contracted; and over the fronts of the hives that are being robbed grass should be thrown loosely and kept dampened.

Any colony that seems unable to defend

TALKS TO BEGINNERS

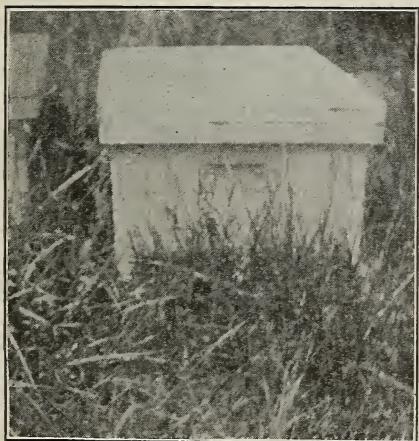
By Iona Fowls

itself should be placed in the cellar for a day or two, and a hive containing a small amount of honey left in its place. After the robbers have used up this honey they will become quiet; but if no honey is left in the place where they had been robbing, they will soon begin robbing from a neighboring hive.

About the easiest way to stop robbing when but one colony is doing the mischief is to interchange the hive locations of the robbed and the robbing colonies.

Beginning of the Honey Flow.

By consulting an old experienced beekeeper of the neighborhood the beginner may learn about when to expect the different honey flows and especially the main flow. For instance, if he lives in the clover belt, he will probably be told that the flow may be expected to begin from seven to ten days after the first few clover blossoms are dis-



When bees return to their hives heavily laden, they ought to have a clean entrance to alight upon, instead of being obliged to waste their time and strength in struggling thru weeds or grass such as shown in front of this hive.

covered. At this time those colonies that have quite a few bees in the first super should be given a second one, but all good colonies should at this time have at least the equivalent of one deep super, no matter whether they are being run for comb or extracted honey.

Management when Producing Extracted Honey.

For about a week after the opening of the honey flow it is a good plan to allow the queen access to two stories and to keep brood in each. This gets the bees into the habit of storing above, so that when the queen is confined to the lower story by the excluder the bees store above more readily. Whenever combs of brood are left separated from the queen by an excluder, the bees frequently start queen-cells on such combs. These queen-cells should be torn down seven or eight days after separating the queen from the brood.

The beginner who has frames of good drawn combs to use in his supers is indeed fortunate, but in most cases he will probably have frames of full sheets of foundation. The full set of 10 should be put on the hive until the bees have drawn out the foundation, then one or two should be removed and the remaining frames equally spaced. This will give more room for storing honey and will result in combs nicely bulged and therefore easily uncapped. When the super is perhaps one-third filled with honey the next super is put on, the two middle frames of foundation being replaced by the two partially drawn combs removed from the first super. This will induce the bees to work in the super more readily. Super room should always be given by placing the new super next to the brood-chamber and placing the full or partly filled supers above it. The only exception to this rule is near the close of the season when the beekeeper is anxious to get his partly filled supers completely filled and yet fears they may need more room before he realizes it. In this case the empty super may be placed at the top above the other supers.

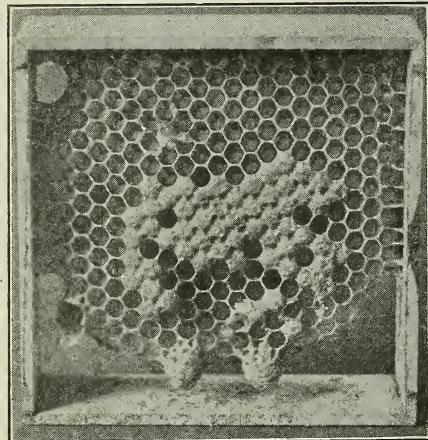
When the weather is very hot, it will be found a help to give more ventilation by moving the inner cover back a little, leaving a quarter-inch crack at the front of the hive. To give still more ventilation, the supers may also be moved slightly backward or forward to give a bee-space, and the hive itself may be raised from the bottom-board by inserting a small block at each front corner. When the hive is raised on blocks in this way, a little smoke should be blown in the opening at the side, when beginning work at the hive, otherwise, the sentinel bees stationed along the crack to protect their home will be likely to dart out and sting.

One might suppose that if all our directions have been carefully followed, no queen-cells would be started, but in a few cases queen-cells may be started in spite of all our care. If so, the beginner is advised to use this plan already mentioned in our last talk. Set the old hive temporarily to one side. In its place put the new hive with nine frames of foundation and at the center one comb with a small patch of eggs and young larvæ and the queen, and above this a queen-excluder and supers, at least the top one containing plenty of room for storing, and on top of all, the hive of brood with capped queen-cells torn down. This hive of brood, it should be understood, is placed immediately over the top super, nothing intervening between them. The hive is then covered with the inner and the outer covers. Eight days later the upper story may be moved to a new location, and the colony left with one capped queen-cell, and a contracted entrance to prevent chilling of the brood. The queen-cell left in the hive should be the best one, long yet plump, with well-defined corrugations on the sides. To avoid injuring the unhatched queen, the frames should

be carefully handled and held in the same position in which they were hanging in the hive. If no increase is wanted, tear down all queen-cells about eight days after placing above, and leave the brood to hatch right where it is, thus increasing the original colony. When giving this plan earlier in our talks, we suggested putting the hive of brood immediately above the excluder; but now during the honey flow when it is more difficult to prevent swarming, there should be at least two supers of partly empty combs between the hive of brood and the new hive in order to make the bees of the upper brood nest feel more queenless, and therefore raise a nicer lot of queen-cells, and also to prevent the nurse bees supplied with royal jelly from going below and starting queen-cells in the lower brood-chamber.

Management for Comb-honey Production.

At the opening of the honey flow the bees, the queen, and the brood are crowded into one story and the other removed; then two comb-honey supers are given to the colony. The extra brood may be given to a weak



When bait sections are used in the supers in comb-honey production, the queen sometimes goes above and raises brood thus spoiling some of the sections. Some beekeepers use a queen-excluder between the supers and brood-chamber to prevent the queen from entering the supers.

colony or may be used to form a nucleus, a queen-cell or queen being introduced. As already explained, it is more difficult in comb-honey production to get the bees to work in the supers than is the case when producing extracted honey. In order to get the bees started to work in the sections, the best plan for the beginner, provided he is able to obtain a few sections of drawn comb from a neighboring beekeeper, is to place such sections of comb in the center or at the sides of the supers. As soon as the foundation is drawn into comb and the bees have filled the supers about one-third full of honey a new super is given, it being placed under the other two. Other supers should be given as fast as needed, the super which

is nearest filled with honey being placed second above the brood-chamber. The empty one should always be placed next to the brood-chamber until near the end of the flow when the bees should be kept more crowded for super room in order that they may finish those already begun. If necessary to give another super late in the flow, it should be placed at the top so that the bees will finish the other supers first. Each super should be removed from the hive as soon as completely sealed. When a super is ready to be taken off, it should be placed above the other supers with a bee-escape board just under it.

By tearing down queen-cells even after they have appeared two or three times, one may sometimes prevent the colonies from swarming and keep them at work. If not, he may find it a help to remove a few frames of brood. (These may be used for building up a weak colony, or for making a nucleus.) If the bees, however, persist in building queen-cells, it would perhaps be just as well for the beginner to allow them to swarm and hive them in the usual way.

When swarming takes place during the honey flow, it is to the beekeeper's advantage to keep as much of the working force of bees together as possible. To bring this about, all but the best queen-cell are torn down, and the old brood-chamber with bottom and cover is not moved to a different part of the apiary, but is placed beside the new hive, with its entrance in the opposite direction so that the returning swarm will be prevented from finding its entrance and will, accordingly, enter the new hive on the old stand. During the following week the old hive is gradually turned about, moving it a little each time until at the end of the week it is close beside the new hive and facing in the same direction. Then during the warm part of the day while the bees are at work in the fields, the old hive may be moved to a new location, a rod or more away, the hive being moved very gently so that the bees will not realize the changed position of their hive. The bees from this hive when returning from the fields will then go back to the old location and help increase the colony in the new hive. And this colony in the new hive is, of course, the one that has the supers and the one that will store the honey.

Swarming.

A person who really wants increase may very well allow natural swarming in either comb or extracted honey production, provided that during the swarming season there is someone at home to hive such swarms. For his benefit we shall explain how one may know when a colony is likely to swarm, how they swarm from the hive, and how the beekeeper should hive them.

Colonies That Swarm.

Strong colonies that cluster on the front of their hives when other colonies are at work or those that start queen-cells are likely to swarm soon, unless some attention is

given them. It is true, however, that colonies sometimes start queen-cells only because their queen is old or defective, and they wish to supersede, that is, to raise another to take her place. In such a case one will usually note that fewer queen-cells are started than under the natural swarming impulse, and also the brood will be scaterringly placed, and often a large proportion of drone brood will be present. When this condition is found, all but the best queen-cell should be torn down and the bees allowed to raise another queen to replace the poor one. But if this condition should arise during swarming time, there would be danger that the swarm might issue with the virgin. To prevent this, a nucleus may be made with the frames of brood and bees and the best queen-cell, the other queen-cells being torn down. This nucleus may then be allowed to raise its queen, and after she is mated, the queen in the old hive may be killed and the nucleus united with the old colony. An easy way to unite is simply to place the nucleus hive over the old one with a thickness of newspaper between.

The Issuing of the Swarm.

Shortly after the queen-cells are sealed the swarm "issues," that is, about two-thirds or three-fourths of the bees together with the queen leave the hive. These bees pour from the hives by thousands until in three or four minutes the air is filled with a great cloud of humming bees. Bees are usually good-natured when swarming, for their honey sacs are filled with honey, enough to convert into comb on arrival at their new home, and also enough to sustain them until they are again able to gather nectar. After flying about for a few minutes, they cluster or form in a large ball, usually on a branch of a tree not far from their hive, waiting to make certain that the queen is with them before they leave for their new home, which is quite often a hollow tree in the woods, a place which in most cases has probably been chosen by scout bees sent out several days before.

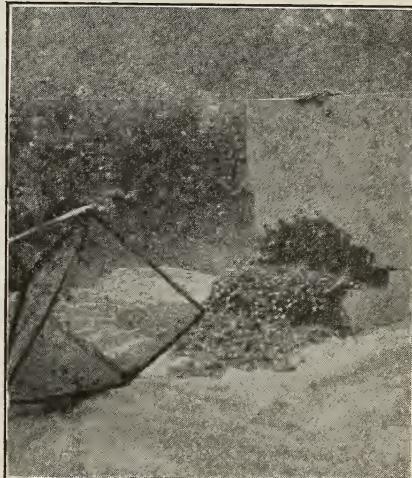
Hiving Swarm With Clipped Queen.

If the queen's wings have been clipped she will be found climbing helplessly about on the grass in front of the hive, attempting to join the swarm, which, of course, she is prevented from doing on account of her clipped wings. After caging her in a spiral cage, she may be put in the shaded entrance of the new hive of combs or foundation which has been placed on the old stand, facing in the same direction as the original hive. The hive should also contain one comb with young larvæ (very important in case of a queen with wings), and above this hive should be placed the supers removed from the old colony; for the new colony will now work with renewed vim, while the old colony will be composed mostly of young bees, and will probably be without a laying queen for as much as two weeks, and will not be in condition to store any surplus for some time.

In a short time the bees will discover that the queen is not with them, and will, therefore, return to the hive. After they have begun running in nicely the queen should be allowed to run in with the rest.

The old hive should be moved to a new location, all but the best queen-cell being torn down and the entrance contracted to keep the brood warm.

Two or three weeks after the swarm issues, the old colony should be examined for eggs. If none are found, it will mean that the queen has not yet begun laying or that she was lost in mating and that the colony



A swarm with unclipped queen, captured in a swarm-catcher, and shaken upon a sheet placed at the front of the hive.

is queenless. In either case the best thing to do is to give them a comb with eggs and young larvæ. If a young queen is present, she will probably begin laying all the sooner because of the presence of the larvæ; and, if the colony is queenless, the bees will undoubtedly begin queen-cells, in which case a ripe queen-cell should be given in a protector or a good laying queen introduced.

Hiving Swarm With Unclipped Queen.

To hive a swarm having a queen with wings, the colony should be shaken into a Manum swarm-catcher (see cut above) or into a basket fastened to the end of a pole, and then shaken on the ground in front of the entrance. When shaken a few may return to the clustering place, so that it may be necessary to shake them from the tree several times to make certain that the queen is also captured; for the colony will not stay in the hive unless their queen is with them.

When bees cluster on some unshakable object, such as a fence post, a sheet may be spread on the ground around the post, the bees gently brushed down upon the sheet by means of a soft brush or handful of weeds, the corners of the sheet gathered up, and the bees carried to the hive and allowed to run in.

MY dear friends, almost ever since Gleanings was started nearly 50 years ago, I have had more or less to say about the value of sweet clover; and some of the old veterans will remember how I was persecuted for recommending the cultivation of a "noxious weed," etc. But I felt so sure that I was

right, I did not feel very much troubled or worried. Well, just now not only the *Ohio Farmer* (page 236, April issue of GLEANINGS) but later still the *Rural New-Yorker*, and later still the *National Stockman and Farmer*, have taken up the subject, and all seem to agree that the New Annual Sweet Clover is going to produce a "revolution" in agriculture. The *Rural New-Yorker* was so enthusiastic that I was afraid they overdid it; but in their issue for May 1, I find the following:

We take back nothing we have said about the possibilities of this annual clover for farmers in the North. We would rather add to it.

Now, no periodical, and, so far as I know, no person has suggested the great things I expect it to do for *Florida*. When I first began to make Florida my winter home I tried to grow the common sweet clover, and I also discussed the matter with the good people at the Experiment Station of Florida; but the general decision seemed to be that sweet clover, like alfalfa and all the other clovers, could not stand the hot and wet summers of Florida—at least in the central and southern parts. I shall now have to confess that, with all my enthusiasm for the new white annual, it never came into my head until the first of last March that this new annual would make a tall growth, feed stock, produce honey for the bees, and make seed, in Florida, all in one single winter. If it is going to produce a "revolution" here in the North, what will it do for Florida? When I first thought of it, about the first of March, I made haste to plant some seeds; and when I left my Florida home, April 27, we had plants eight or ten inches high. Some of them made a growth of one inch in 24 hours. I submit a picture; and we



And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat.—GEN. 1:29.

Do good, and lend, hoping for nothing again.—LUKE 6:35.

The wilderness and the solitary place shall be glad for them; and the desert shall rejoice, and blossom as the rose.—ISA. 35:1.

plan to give other pictures taken every two weeks. It is very unfortunate that I did not think to sow some of the seeds in the fall. I can not at present hunt up any report of this new annual in Florida; but I submit one below from Mississippi:

I planted 10 seeds in the fall to see if they would stand our winters. The plants came thru winter in fine order. By May 15 they were large enough to plow under for fertilizing. Spring sowing ripened the seed by July 10. I believe it will succeed on any well-drained soil here, and can be sown in the fall, and plowed under in time to grow a fall crop of cow peas or Sudan hay, and also late corn. If this clover succeeds here generally it will be the best soil-renewer. It makes seed readily.

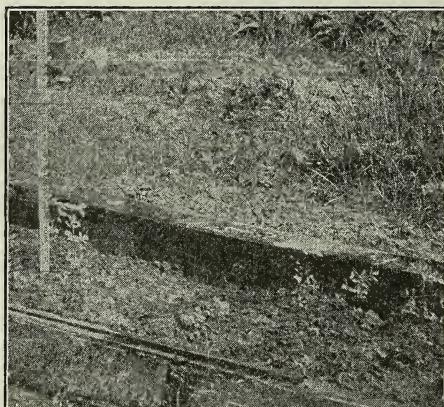
J. J. CLARK.

Jackson, Miss., Nov. 10, 1919.

On page 413, July, 1919, you will see a similar report from Bay City, Texas. See report from Hawaii further on.

Well, since this new plant is now getting to be of such importance it may be of interest to our readers to read the letter below, which came from our good friend Prof. H. B. Hughes of the Iowa State College, Ames, Iowa, just about two years ago.

Mr. A. I. Root:—We are sending you \$40.00 worth of seed—not by freight, but enclosed here-with attached to an explanatory sheet and with our compliments. You will be interested in the attached statements regarding this seed, which I am send-



The new annual sweet clover plants April 27, 1920,
at Bradenton, Fla.

ing to the different State experiment stations. Will you plant this seed this year?

FARM CROPS SECTION.

By H. D. Hughes.

Ames, Iowa, April 15, 1918.

The letter inclosed a packet containing perhaps 50 seeds. I had a big laugh when I received it, and then I divided the few seeds, and sent about half of them, with the letter, to Prof. C. E. Thorne of the Ohio Experiment Station. He replied at once that they had already received a similar packet of seed. What particularly impressed me was a printed statement (of recent date) in regard to the new legume, reading as below:

IOWA STATE COLLEGE
and

Iowa Agricultural Experiment Station.
Ames, Iowa.

An annual white sweet clover was discovered at the Iowa Experiment Station in March, 1916, in seedings made in the college greenhouses. In field trials it made a growth of 4½ feet in 3½ months, while medium red clover made a growth of 5 inches, and biennial white clover a growth of 14 inches.

Letters have come to the Iowa station from all parts of the civilized world, begging for just a few seeds. Unheard-of prices have been offered for it. *Time and again we have been asked to set our own price, and that it would be paid gladly; but the Iowa station has not sold a single seed.*

In the spring of 1918 100 seeds were sent to each of the State experiment stations, and 50 to each seed company in the United States. Small samples were also sent to farmers and seed-growers in different parts of the world who were especially interested.

The reports received by the Iowa station shows that in nearly all parts of the United States this clover has made the remarkable growth of from four to eight feet in from four to five months from seeding.

Please note in the above the sentence that I have taken the liberty of putting in italics. My good friend Prof. Hughes (and I take it for granted the whole State of Iowa is back of him) refused to sell the seed that made a promise of such value, no matter what price was offered; and in their proposal to send out a few seeds free of charge there was no restriction confining themselves to the one State of Iowa; but I take it that a small packet of the seed was to be given to each applicant in the whole wide world, "without money and without price." The great State of Iowa seems to have gotten hold of the wonderful text that I have chosen at the head of this article—"Do good and lend, hoping for nothing again." Of course I planted some of the seeds sent me two years ago by friend Hughes; and when they were in bloom I gave notice to all the readers of GLEANINGS that I would send a few seeds to anybody who would send a stamped and addressed envelope. See GLEANINGS for October, 1918, page 629. During the two years that have passed we have sent out

over 1,000 packages, and answered questions in a great part of these letters with the view not only of helping the beekeepers but the cause of agriculture thruout the whole wide world.

I have already given an extract from what the *Ohio Farmer* has to say about the new legume, and below I submit a clipping from the *Rural New-Yorker* of Mar. 13:

ANNUAL SWEET CLOVER; NEW PLANT HIRED MAN An Accidental Discovery Which Changes Farming.

The Iowa Agricultural College now presents a candidate for the position of plant hired man which seems to us most promising of any yet reported. It is an *annual white sweet clover*. This was not known to exist until March, 1916, when H. D. Hughes, who had charge of the farm crop work at the college, observed a number of very large sweet clover plants. They all seemed to come from one particular lot of seed. These plants seemed far superior to the others, and looked as if they were about ready to bloom less than three months from seeding. The college had secured some 500 different lots of sweet clover seed for trial, and they were planted in the greenhouse in January. At about March 1 plans were made to tear these plantings out to make room for other crops, when Mr. Hughes noticed these larger plants. When this seed was planted it was supposed to be the common biennial or two-year white variety, but when the difference was discovered these superior plants were left in the soil. By the middle of March they had grown to a height of from 3 to 4½ feet, and most of them were in full bloom. At the same age the common sweet clover was less than one foot high. All who have grown the common varieties know that practically one season must be given up while the plant gets ready to work!

..A POSSIBLE "SPORT."—It is not definitely known where this clover originated, but it probably first appeared in Alabama. The indications are that it first appeared as a "sport" or mutation on wild land. Mr. Hughes gives the following guess as to its origin:

"It is quite certain that the 'sport' did not occur in a cultivated field, for under these conditions the seed would have been lost. It evidently occurred on wild land several years, where it made its growth and produced its seed year after year without anyone becoming aware of the fact that it was making its complete growth in a single season. Considerable sweet clover seed is harvested in certain sections of Alabama by negroes, who either stripped the seed off the standing plants or cut the plants down and threshed the seed out by hand. Under these conditions the seed of the two clovers became mixed."

Its discovery in the Iowa greenhouse was one of those fortunate accidents which have had so much to do with changing industry. For we firmly believe that the use of this annual sweet clover is destined to upset many of our present ideas of farming and fertilizing.

THE FIRST PLANTING.—That first season in the greenhouse it was possible to obtain a number of seeds. There were 22 plants in this original lot, and they gave enough seed to grow a short row for each. This seed was planted about the middle of June (the same year in which the plants were discovered). A thin seeding of oats was made with them. At the same time other clovers were seeded for comparison. The oats were cut when the heads were in "milk" without injuring the clover. At this time the annual sweet clover plants were about six inches high. After that they grew rapidly. The 22 plants varied in height and maturity as they

grew in the greenhouse, and this difference was shown in their seedlings. Some came into bloom $\frac{1}{2}$ months after seeding, while others required $3\frac{1}{2}$ months at least. At $3\frac{1}{2}$ months the best strains had reached a height of $4\frac{1}{2}$ feet. During this same time the common or biennial white sweet clover had grown only 12 to 14 inches, while the yellow sweet clover stood eight to ten inches high. A further comparison was made with medium red clover. As many of our readers know, under ideal conditions of soil and weather red clover will sometimes make 12 or even 18 inches of growth the same season it is seeded—but that is unusual. In this Iowa experiment the red clover seeded at the same time as the annual sweet clover made from three to five inches of growth, while the sweet clover grew three to $4\frac{1}{2}$ feet.

Mr. Hughes tells how this difference in growth was noted on the original plants grown in the greenhouse.

"When the plants were mature they were pulled, and the root growth found then large and vigorous, but entirely different from that of the biennial sweet clovers. The biennials have a large succulent taproot at the end of the first season's growth, much like that of a parsnip, and at the top of the root, about an inch below the surface of the ground, a crown with anywhere from five to fifty buds ready to burst forth at the first sign of spring. But the root of the new clover was entirely different. Altho large and vigorous, there was no life-giving succulence, and no crown nor buds to begin life anew the next spring. The plant had made its full growth, bloomed, ripened its seed, and died—tops, roots, and all, clearly establishing the fact that this clover was an *annual*."

The annual sweet clover has about the same analysis as clover or alfalfa. It has the same habit of taking nitrogen from the air, and in the season of seeding it makes four or five times as much growth as red clover and gets out of the way for the next season's crop.

TESTING THE NEW PLANT.—Having become satisfied that this annual sweet clover is a new plant and that it has the power to reproduce its peculiar characteristics, the Iowa Station proceeded to collect seed and fully test the clover. This seed was sent in small quantities all over this country, and from Denmark to Hawaii. It has given good results everywhere. It made its full growth in from three to four months, and grew from $3\frac{1}{2}$ to seven feet high—depending on soil and conditions. A report from Hawaii shows that they grew two crops in the season—the second from seed produced by the first crop. The first averaged five feet in height, the second $4\frac{1}{2}$ —with fully seven weeks' bloom for the bees. In Mississippi seeds were sown in the fall to see if they would endure the southern winters. The plants came thru the winter, and by May 15 were large enough to plow under for fertilizing—thus indicating a new value for the plant. In fact, it would seem as if this clover is to serve as the unusual nitrogen hired man.

One of the most interesting tests made thus far with the annual white sweet clover was at the Iowa Agricultural Experiment Station in 1919, when the clover was sown with Iowa oats. The oats were drilled in at the rate of three bushels per acre, and biennial clover was seeded at the rate of 15 pounds per acre, with a small amount of seed of the annual white sweet clover scattered in also. An excellent stand of clover was secured. When the oats were in the milk stage they were cut with a mower for hay, clipping the clover plants off close to the ground. Following the removal of the oats the clover grew vigorously. The biennial white sweet clover, which made a very thick stand, grew to a height of about 18 inches, while the annual white sweet clover plants grew to a height of from

three to $4\frac{1}{2}$ feet and came into bloom, but did not set seed. Similar reports regarding the growth of this clover when seeded in with small grain have come from different parts of the country.

PASTURE POSSIBILITIES.—In Kansas the clover was seeded in the spring on winter wheat. This wheat made a rank, heavy growth, yet after it was cut the sweet clover came on and made a growth of $3\frac{1}{2}$ to $4\frac{1}{2}$ feet—and matured seed. Let any man consider the amount of pasture for hogs or cattle this growth of clover would make, or how it would fit the land for corn or potatoes! Why cannot you do the same after any crop which will mature at least 10 weeks before frost? Someone might easily have made a fortune by holding this seed like a miser until a large quantity had been gathered, and then offering it at an extravagant price. That has been done many times with worthless "varieties" by using some well-advertised name. In the case of this new clover a full and free distribution will be made. The Department of Agriculture and several seed companies are at work developing strains of this annual clover, but the original discovery was made at the Iowa College, and full credit should be given Mr. H. D. Hughes.

We take pleasure in giving the following from *The National Stockman and Farmer* of April 3d:

A NEW DISCOVERY—AN ANNUAL SWEET CLOVER.

An annual white sweet clover which a few years ago was not known to be in existence was discovered at the Iowa Experiment Station, Ames, Ia., in March, 1916, by Professor H. D. Hughes, who is in charge of the Crop Investigation work at that Station. Since that time it has been tried out with wonderful results in all parts of the country, growing to a height of from four to eight feet in four months from seeding.

One of the most interesting reports was received from Mr. Henry Field, a prominent Iowa seedsman, who had the following to say regarding the annual white sweet clover:

"Most of the plants were higher than a man's head. Bore leaves very close to the ground. Were exceptionally well branched and fine stemmed, resembling in this regard the yellow biennial. First blooms 80 days from seeding. It is going to be a great crop for the beekeepers. In fact, it is going to be a boon to the whole country, especially to the renter. A quick-growing legume has been needed this long while. It grows from four to seven feet high in about four months. The hay crop may be obtained in three months; pasture almost in 30 days if used judiciously. It will make as much growth in four months as the biennial does in 15 months and seems to be in every way identical except in its habit to deliver the goods in such a short time. The college people ought to be complimented on the discovery of so valuable a legume."

Two years after its discovery the annual white sweet clover was being grown in practically every State in the Union and in many foreign countries. This is a record hard to equal as probably no other new plant ever received such wide distribution in such a short time after its introduction, and undoubtedly few plants have given such uniformly satisfactory results, considering the great variation in the conditions under which this clover has been grown.

The description of this clover may sound too wonderful to be true, but reports come from all parts of the world confirming these statements. The following report, received from a Kentucky farmer, shows what the annual white sweet clover will do in that State: "This is sure an annual white sweet clover and my opinion is that it will take the lead of the biennial white sweet clover as soon as

there is enough of the seed to put on the market. It looks as tho it will be a great pasture and hay crop and great for honey production, as it will produce pasture, hay, and honey in such a short time after sown. The plants grew three to four feet in height and grew thru the extreme drouth of August when bluegrass and other pastures were barren and burnt up."

The sweet clover which perhaps has been grown most extensively in the past is the biennial white, altho the biennial yellow is also used to a large extent. This makes four different kinds of sweet clover—biennial yellow, biennial white, annual yellow, and the new annual which Professor Hughes discovered in 1916.

The advantage of the annual may be readily understood, as it can be planted and grown as a crop the same season. This would be of material advantage to the one-year renter or to the man who is short of hay, as it promises to be of great value as a hay crop and also for pasture. There is not much doubt but that it will take the place of the common clovers as soon as there is a sufficient amount of seed available for general farm use.

The Maryland Experiment Station was well pleased with this clover and made the following report:

"Planted about May 30. Grew to a height of 45 inches. Seeds were mature latter part of August. It seems to me that it will be possible for us to use this clover as a green manure crop to good advantage if we should plant the seed in the wheat fields in the spring and plow it under in August for green manure, and then plant the land to wheat. Crop looks very promising."

The Iowa Experiment Station has enough seed on hand to furnish a small amount to as many as 150,000 farmers, and they wish to supply every farmer who would like to try it. All that is necessary to secure this is to send a stamped, self-addressed envelope along with the request for seed.

Probably the best method for handling this seed will be to sow it in a row in the garden, where it can be given the best of care and observed to see how it is suited to conditions and where seed can be matured and harvested, as it ripens, for later use.

The following from a recent letter from Prof. Hughes comes in nicely here:

Dear Mr. Root:—I very much appreciate having your letter of the 20th. Evidently you must have been making good progress with the new clover, as I notice a statement in the reprint which you enclose to the effect that approximately 1,000 people had secured samples of seed from you.

You will be interested in knowing that we have had approximately 40,000 requests during the past four or five weeks for samples of this seed.

I am very much interested in your statement regarding the possible value of this crop for Florida conditions. We sent a few seeds to the Florida station in the spring of 1918, but I do not believe we ever had a report from them. The report from Mississippi is very interesting.

Very truly yours,
H. D. HUGHES,
Farm Crops Department.

Ames, Iowa, April 28, 1920.

Below are some valuable suggestions clipped from the printed matter sent with each little packet of seeds:

To indicate the possibilities of a small sample of seed such as we are sending you, let me tell you that one Iowa man harvested about 400 pounds of this seed in the fall of 1919, and all of this came from a small sample of seed which we supplied him in the spring of 1918, a sample only one-fourth as large as we are supplying you.

This seed has been scarified and has given a germination of 91 per cent. Before scarifying the germination was 34 per cent. It is necessary to scarify sweet clover seed in order to get a satisfactory germination. Nearly every seed company in the United States and many seed-growers and farmers are now using the Ames Hulling and Scarifying Machine, perfected and given to the world a few years ago by the Iowa Agricultural Experiment Station.

Sweet clover will not make a satisfactory growth unless the soil contains an abundance of lime and the proper sweet clover bacteria. If the bacteria are not present or if the soil is acid, it is not likely that these plants will make a growth of over one foot. With the presence of the bacteria and lime there is no reason why they should not make a growth of from 4 to 8 feet, depending upon the section of the country where grown. *Insure the presence of lime by working it into the surface soil where you plant this seed. Get inoculated soil from an alfalfa or a sweet clover field, or along the roadside where sweet clover has been growing vigorously and work it into the surface soil where these seeds are planted. We consider this of very great importance.*

H. D. HUGHES,
Chief of Farm Crops.

Iowa Agricultural Experiment Station.

The following is just at hand from our Ohio Agricultural Experiment Station:

We have grown the new annual sweet clover two seasons, and think it is likely to fill most admirably a heretofore vacant place among annual legumes. If you will come down in midsummer, we will have something to show you.

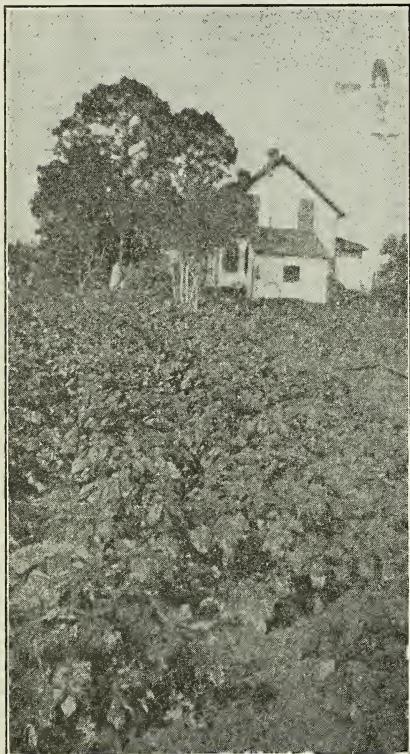
C. G. WILLIAMS.
Agronomist.
Wooster, O., May 7, 1920.

"DAILY BREAD."

For sometime back I have been paying the barber 60 cents for cutting my hair and trimming my whiskers, but a few days ago when I handed him a dollar, he gave me back only 20 cents. Next time I went to another barber, but the price was just the same. You all know about it. It is not only the barber, but all things seem to be still climbing in price, just the same, altho some great and good authority has just announced that we are "approaching" the climax, and things will soon go back, at least a little, to the old level.

On page 235, April issue, I mentioned that one of our grocers came down and offered me \$5.00 a bushel for new potatoes. When it came *that way*, I didn't feel a bit hurt," that is, "not so you would notice it." Well, that was about the middle of February, and this is close to the middle of April, 60 days; and that precious little wind-power electric auto has carried one and often two loads of potatoes up town every day since. I have not even once been able to give the grocers as many potatoes as they wanted. Yesterday I saw Bermuda new potatoes quoted at \$20.00 to \$22.00 a barrel. As a barrel usually contains about 11 pecks, the latter price would be \$2.00 a

peck or \$8.00 a bushel. In that article in April Gleanings I told you I received \$25.00 for the potatoes dug from four rows 120 feet long. Well, that same long bed now contains a better stand of potatoes than those that brought the \$25.00. How is that for Florida, in one single winter of just six months? Below is a picture of that bed of potatoes.



Four rows of potatoes, 120 feet long, the second crop grown in one winter, at Bradenton, Fla.

Why do the people of Manatee County permit me, alone, year after year, to grow all the winter potatoes? Well, they say the business is a "gamble." So it is, to some extent. Almost every winter frost catches me more or less, but here comes in my new method. By starting in a protected bed or a bed that can easily be protected, I save three and sometimes four weeks. They transplant so easily, the potatoes don't know it, and people who see them next day "don't know it." I have told you all about it, over and over again. Now, let us go back briefly to where I started. If almost everything, as well as daily bread, has advanced, and is still advancing, kind, patient "old Dame Nature"

has not raised her price "one iota." If you talk about hiring help to "make garden," I admit that the cost has advanced, but that is a different matter. This is the point. Dear old Dame Nature pays old men like myself just as liberally for their work in the garden, as she ever did, and if the sunshine and showers cost any more than they used to cost, I haven't heard of it.

There is one thing *more*, that is the "same old price." The wind that blows over our heads, day and night, has not advanced. This same "cold North wind," that has made such havoc all over the great North, is now running that auto, and of late, lighting my study, warming it up when needed by a beautiful little electric radiator; and *still further*, cooking my meals, at least to a certain extent. I never ate any nicer Hamburg steak, than that cooked right on the table by a beautiful little electric "grill." With the *two* windmills, all the batteries are easily kept fully charged.

Later.—I am now back in my home in Medina, Ohio; and instead of finding potatoes worth \$6.00 a bushel, which I thought an awful price down in Florida, I find the following announcement in the *Cleveland Plain Dealer* for May 1:

NEW POTATOES HIT 25-CENTS-LB. MARK

HASTINGS VARIETY WHOLESALE AT \$30 A
BARREL.

At 25 cents a pound, you will notice this would be \$15.00 a bushel—not a *barrel*, mind you, but \$15.00 for one bushel of new potatoes grown in Florida; and at that price per bushel they would probably retail at \$4.00 a peck. "Did you ever!"

Well, now perhaps the great wide world will listen to me when I urge again that Irish potatoes, at least a few of them, should be started in almost every home, in a protected bed. Today is May 4; and instead of the fields being green with oats in this stiff clay region, there has been such a succession of rains that scarcely a field has been touched by the plow or anything else. Of course no one could plant potatoes just now, even if they were \$4.00 a peck. Now see where my invention comes in. Start your potatoes in a bed which can be covered with sashes, and these same sashes that now protect from frost will keep off the rain when it is not wanted; and when the time comes that the ground can be worked out in the open, instead of planting a piece of potato you can plant a little hill of potatoes having big bushy roots and some green tops.

Classified Advertisements

Notices will be inserted in these classified columns for 30 cents per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued while they are in good standing.)

L. S. Griggs, Gronemeier Bros., Hyde Bee Co., C. J. Baldridge, R. Kramsko, Hofmann Apriaries, Charles D. Sherman, A. M. Applegate, L. L. Ferree, Dr. E. P. Stiles, J. W. K. Shaw & Co., Oscar Mayeaux, Henry Field Seed Co., W. D. Achord, A. I. Root Co. of Iowa, Novelty Mfg. Co., Mead Cycle Co., J. J. Wilder, Jenser's Apriaries, I. F. Miller, Julius Gentz, Ward Lankin, O. H. Townsend, Charles Kennard, W. B. Davis Co., Progress Nurseries, E. A. Harris, W. J. Forehand & Sons, Foster Honey & Merc. Co., Dr. J. H. Black, M. E. Eggers.

HONEY AND WAX FOR SALE

Beeswax bought and sold. Strohmeyer & Arpe Co., 139 Franklin St., New York.

FOR SALE.—Clover and buckwheat honey in any style containers (glass or tin). Let us quote you. The Deroy Taylor Co., Newark, N. Y.

FOR SALE.—Four tons choice clover honey, extra well ripened, packed in new 60-lb. tins, two in a case. Wish to sell in one lot. Lee & Wallin, Brooksville, Ky.

FOR SALE.—12,000 lbs. new crop, well-ripened Old Ky. No. 1 clover honey, in 60-lb. cans, at 22½c per lb. f. o. b. Brooksville. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE.—We have a very choice lot of white clover honey at 25c per lb. in 60-lb. cans; also some very choice fall honey at same price. M. V. Facey, Preston, Minn.

FOR SALE.—We have a small part of our crop of white clover-basswood extracted honey left, packed in new 60-lb. cans, two to the case. Write for prices. D. R. Townsend, Northstar, Mich.

E. D. Townsend & Sons, Northstar, Michigan, offer their 1919 crop of white clover and white clover and basswood blend of extracted honey for sale. This crop (it's only a half crop this year) was stored in nice white clean extracting combs that had NEVER had a particle of brood hatched from them. We had more of those extracting combs than we could possibly use this year, and we piled them on the swarms as needed. NOT A SINGLE OUNCE OF HONEY WAS EXTRACTED UNTIL SOME TIME AFTER THE CLOSE OF THE WHITE HONEY FLOW; consequently NONE could be produced that will excel this crop of honey. Of course, it is put up in NEW 60-pound net tin cans, and they are cased up for shipment, two in a case. If you are one of those who buy "just ordinary" honey, at the lowest price possible, kindly do not write us about this lot of honey, but if you can and have customers who will want the very best and are willing to pay the price, order a small shipment of this fine honey as a sample, then you will know just what our honey is and whether it is worth the little extra price we ask for it or not. We quote you this fine honey, either clear clover, or that containing about 5 per cent of basswood—just enough basswood to give it that exquisite flavor relished by so many—one can, \$15.50; case of two cans, \$30.00. If a larger quantity is needed, state

how much you will need and we will quote you a special low price. Kindly address, with remittance, E. D. Townsend & Sons, Northstar, Mich.

HONEY AND WAX WANTED

WANTED.—Beeswax.

The L. D. Caulk Co., Milford, Dela.

BEESWAX WANTED.—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED.—Bulk comb, section, and extracted honey. Write us what you have and your price. J. E. Harris, Morristown, Tenn.

WANTED.—Extracted and comb honey. Carload or less quantities. Send particulars by mail and samples of extracted. Hoffman & Hauck, Inc., Woodhaven, N. Y.

We are paying 38c in cash and 40c in trade for bright yellow beeswax f. o. b. your station, in 100-pound lots or over.

Foster Honey & Merc. Co., Boulder, Colo.

WANTED.—BEESWAX. During June I will pay 40c per lb. cash for average yellow beeswax, delivered here. State quantity and quality and await reply before shipping.

E. S. Robinson, Mayville, N. Y.

BEESWAX WANTED.—We are paying higher prices than usual for beeswax. Drop us a line and get our prices, either delivered at our station or your station as you choose. State how much you have and quality. Dadant & Sons, Hamilton, Illinois.

HONEY WANTED.—50,000 lbs. bulk comb and extracted 1920 crop, produced and packed according to my instructions and specifications in containers furnished by me. Write today for instructions and contract blank.

W. A. Hunter, Terre Haute, Ind.

WANTED.—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance.

The A. I. Root Co., Medina, Ohio.

FOR SALE

I manufacture Modern Cypress beehives. Write for prices. J. Tom White, Dublin, Ga.

HONEY LABELS.—New designs. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE.—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

Bruno mailing device for sale. Never used. First offer takes it.

J. O. Stewart, 742 Elmore Place, Brooklyn, N. Y.

FOR SALE.—SUPERIOR FOUNDATION, "Best by Test." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

We can save you money on Cypress hives, frames, etc. Write for prices.

Sarasota Bee Co., Sarasota, Fla.

How many queens have you lost introducing? Try "The Safe Way," push-in-comb introducing cage, 50c. Postpaid. O. S. Rexford, Winsted, Conn.

FOR SALE.—Ten-frame standard dovetailed hives in lots of from one to fifty. Very cheap. Write for prices. Wm. Craig, Aitkin, Minn.

ROOT'S BEE SUPPLIES.—For the Central Southwest Beekeeper. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

FOR SALE.—100 second-hand cases, each containing two 5-gallon cans. S. T. Fish & Co., 163 W. So. Water St., Chicago, Ills.

FOR SALE.—Comb foundation at prices lower than you had thought possible. Wax worked for cash or on shares. Satisfaction guaranteed. E. S. Robinson, Mayville, N. Y.

FOR SALE.—Second-hand honey tins, two per case, in exceptionally fine condition at 50c per case. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE.—150 cases (2 in case) second-hand 5-gallon honey cans at 50c per case f. o. b. Milwaukee. Laabs Brothers Co., 20th & Walnut Sts., Milwaukee, Wis.

PORTER BEE ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies.

R. E. C. Porter, Lewistown, Ills.

SECTIONS—SECTIONS.—A special lot of fifty thousand 4 $\frac{1}{4}$ x 1 $\frac{1}{2}$ No. 1 bee-way sections, August Lotz make, while they last at \$10.00 per 1,000 f. o. b. Reno, Nevada. H. F. Hagen, Reno, Nevada.

FOR SALE.—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, O.

FLORIDA BEEKEEPERS.—You save money by placing your order for Root's Bee Supplies with us. We carry the complete line. Will buy your beeswax. Write for catalog.

Crenshaw Bros. Seed Co., Tampa, Fla.

FOR SALE.—One 8-frame Root's automatic power honey-extractor; one honey pump, one gasoline engine. I will sell all together, or any one separately. Write for price.

Elmer Hutchinson, Lake City, Mich.

FOR SALE.—200 comb honey supers, 4x5x1 $\frac{3}{4}$, complete, painted, used once, in A-1 condition; 75 Danz. bodies of drawn comb, 400 empty frames, lot of sections, foundation, feeders, etc. No disease. C. C. Brinton, 32 Luzerne Ave., Pittston, Pa.

FOR SALE.—Good second-hand double-deck comb-honey shipping cases for 4 $\frac{1}{4}$ x 4 $\frac{1}{4}$ x 1 $\frac{1}{2}$ sections, 25c per case, f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

CANADIAN BEE SUPPLY & HONEY CO., Ltd.—73 Jarvis St., Toronto, Ont. (Note new address.) We have made-in-Canada goods; also can supply Root's goods on order. Extractors and engines; GLEANINGS and all kinds of bee literature. Get the best. Catalog free.

FOR SALE.—Root's Extractors and Smokers, Dadant's Foundation, and a full line of Lewis' Bee-ware. Our new price list will interest you. We pay 38c in cash and 40c in trade for clean yellow beeswax delivered in Denver. The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

HONEY TANKS FOR SALE.—Heavy tinned iron tanks with water jacket. Have two faucet outlets suitable for bottling or storage purposes. 20-gallon capacity, \$10.00; 100-gallon capacity, \$50.00. With three-ring gas burners and sheet iron stand, \$75.00; also one 50-gallon tinned iron tank with three syrup gate outlets, \$15.00; also gas oven suitable for liquifying six 5-gallon tins. \$25.00. Hoffman & Hauck, Inc., Woodhaven, N. Y.

FOR SALE.—100 four-frame nucleus hives in lots of 5 or more. The frames used just fit crosswise in any regular 10-frame deep super, same holding 13 nucleus frames. Just the thing for expert or beginner. All hives have good galvanized telescope covers, and are painted inside and out. All clean, in first-class condition and absolutely free of any disease. Price, empty, 75c each; with 3 frames of full drawn combs, \$1.50 each, f. o. b. Marion. Write for particulars.

James W. Bain, Marion, Ohio.

WANTS AND EXCHANGE

WANTED.—Good extractor. Emil Uyldeert, New Brunswick, N. J.

WANTED.—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED.—Thin super foundation mill, also smooth roller mill, 10 x 2 inches. Wilbert Harnack, McGregor, Iowa.

WANTED.—To exchange Saanen Nanny goat for queen bees, pound bees, and supplies. S. G. Catchpole, Oil City, Pa.

WANTED.—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut St., Cincinnati, O.

OLD COMBS WANTED.—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slungum. Send for our terms and our new 1920 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Illinois.

BEES AND QUEENS

Finest Italian queens. Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

Golden Italian queens, untested, \$1.25 each; dozen, \$12.00. E. A. Simmons, Greenville, Ala.

FOR SALE.—1920 Golden Italian queens, price list free. Write E. E. Lawrence, Doniphan, Mo.

THAGARD'S Italian queens, circular free, see larger ad elsewhere. V. R. Thagard, Greenville, Ala.

QUEENS ON APPROVAL.—Bees by package or colony. Birdie M. Hartle, Reynoldsville, Pa.

FOR SALE.—Hardy Italian queens; one, \$1.00; 10, \$8.00. W. G. Lauver, Middletown, Pa.

PHELPS' GOLDEN QUEENS will please you. Mated, \$2.00. Try one and you will be convinced. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE.—Bright Italian queens, \$1.50 each; \$14.00 per doz. Ready after April 15. T. J. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE.—Italian queens, mailed as soon as hatched. Safe arrival guaranteed. June 1, one, 75c; 10, \$6.00. Evan Jones, Franklinville, N. J.

When it's GOLDEN it's Phelps'. Try one and be convinced. Virgins, \$1.00; mated, \$2.00. C. W. Phelps & Son, Binghamton, N. Y.

SIMMONS.—Goldens and three bands, prize-winning strain. Also nucleus. Allen Simmons, Claverack, N. Y.

FOR SALE.—Italian queens, three-banded and Goldens, untested, \$1.25 each; 6, \$6.50; 12, \$13.00. Now ready. G. H. Merrill, Pickens, S. C.

FOR SALE.—Italian queens, three-banded, untested \$1.50 each; 6, \$7.50; 12, \$14.00. Tested queens, \$3.00 each. Robt B. Spicer, Wharton, N. J.

FOR SALE.—Golden queens. Will begin filling orders May 15 in rotation. Untested, \$1.10; selected untested, \$1.50 each. Safe arrival. Hazel V. Bonkemeyer, R. D. 2, Randleman, N. C.

QUEENS.—Select three-banded Italians. Reared from the best mothers and mated to choice drones. Ready to ship May 1. Untested, one, \$2.00; six, \$9.00; twelve, \$16.80. After June 1 one, \$1.50; six, \$8.00; twelve, \$14.00. Select tested, \$3.00 each. Write for prices per hundred. Descriptive circular free. Hardin S. Foster, Dept. G, Columbia, Tenn.

FOR SALE.—Pure Italian queens, untested, \$1.50 each; \$15.00 per dozen. Tested, \$2.50 each. Satisfaction guaranteed.

D. P. Barrett, Ann Arbor, R. D. No. 3, Mich.

FOR SALE.—My famous three-band Italian queens, one for \$1.25; six for \$7.00. From June 1 to November.

J. W. Romberger, 3113 Locust St., St. Joseph, Mo.

FOR SALE.—Leather-colored Italian queens from Dr. Miller's breeder. Virgins, \$1.00; tested, \$1.50. July 1, 5, \$6.00; 10, \$11.00.

F. R. Davis, Stanfordville, Dutchess Co., N. Y.

Bees by the pound a specialty; 2,000 lbs. for May delivery, 1920; 200 Italian queens for sale with above bees. Write for prices.

A. O. Jones & H. Stevenson, Akers, La.

GOLDENS THAT ARE TRUE TO NAME. 1 select untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100.00.

Garden City Apiaries, San Jose, Calif.

FOR SALE.—Best three-banded Italian queens ready June 10. Untested only, one, \$1.50; 6, \$8.00; 12, \$15.00. Book orders now.

Ross B. Scott, Lagrange, R. D. No. 4, Ind.

FOR SALE.—QUEENS. Italian queens of excellent stock will be ready to mail June 1. Untested, \$1.50 each; 6, \$7.50; 12, \$14.00.

J. D. Harrah, R. D. No. 1, Freeport, Oregon.

FOR SALE.—Leather-colored Italian queens, tested, until June 1, \$2.50; after, \$2.00. Untested \$1.25; 12, \$13.00. Root's goods at Root's prices.

A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE.—Golden and three-banded queens, untested, April, May, and June delivery, \$1.25 each; \$12.50 per doz. Satisfaction.

R. O. Cox, Greenville, R. D. No. 4, Ala.

Golden queens ready April 15th. One queen, \$1.50; 6, \$7.50; 12, \$14.00; 100, \$100.00. Virgins, 75c each.

W. W. Talley, Greenville, R. D. No. 4, Ala.

BEES BY THE POUND.—Also QUEENS. Booking orders now. FREE circulars give details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

FOR SALE.—Hardy Northern-bred Italian queens, untested, \$2.00 each; 6, for \$11.00; select tested, limited number, \$3.00 each after June 1.

Dr. C. E. Sheldon, Coeur d'Alene, Idaho.

FOR SALE.—Pure Italian queens, packages and nuclei. One untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100.00.

Golden Star Apiaries, San Jose, Calif.

FOR SALE.—Untested Golden Italian queens, \$1.25 each; tested queens, \$2.50 each. Satisfaction guaranteed.

J. F. Michael, Winchester, R. D. No. 1, Ind.

FOR SALE.—Earliest queen-rearing yard in Colorado. Young queens now ready. Tested Golden breeding queens a specialty. A. C. Stanley and E. C. Bird, 1421 Walnut St., Boulder, Colo.

PURE ITALIAN QUEENS.—Not the cheapest, but the best we can grow; bright yellow, with clean bill of health; sure to please; such as we use in our own yards. Untested, \$1.25; \$14.00 per dozen.

J. B. Notestein, Bradenton, Fla.

FOR SALE.—1920 prices for "She suits me" queens. Untested Italian queens, from May 15 to June 15, \$1.50 each. After June 15, \$1.30 each; \$12.50 for 10; \$1.10 each when 25 or more are ordered.

Allan Latham, Norwichtown, Conn.

FOR SALE.—3-banded Dr. Miller and Walker's queens, after June 10 (am booked full until then), \$1.25 each, 6 for \$7.00, 12 for \$13.00. Selects, 25c each higher.

Curd Walker, Jellico, R. D. No. 1, Box 18, Tenn.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, \$1.00; mated, \$2.00.

C. W. Phelps & Son, Binghamton, N. Y.

Italian queens, the kind that are sure to please you. Untested, in April, \$1.25 each; one untested, May 1 to July 1, \$1.00; one tested, May 1 to July 1, \$1.50. Discount on large orders. Safe arrival guaranteed. L. R. Dockery, Carrizo Springs, Texas.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; May to August, untested, each, \$2.00; six, \$8.00; doz., \$15.00; tested, \$4.00; breeders, \$5.00 to \$20.00. J. B. Brockwell, Barnets, Va.

FOR SALE.—Three-band leather-colored Italian queens. Safe arrival guaranteed. No disease. Hustlers, none better. 1, \$1.00; 12, \$10. Write for circular and prices on quantities.

J. M. Cutts, R. D. No. 1, Montgomery, Ala.

FOR SALE.—Victor's Italian Queens. Prompt service, courteous treatment, and painstaking effort are my inducements for your patronage. Mated, \$1.25 each, six, \$7.00; twelve, \$13.50, from June 1 to Oct. 1. Julius Victor, Martinsville, N. Y.

THE ITALIAN QUEENS OF WINDMERE are superior three-band stock. Untested, \$1.50 each; six for \$8.00; tested, \$2.00 each; select tested, \$2.50 each; virgins, \$1.00. Nuclei for sale.

Prof. W. A. Matheny, Ohio University, Athens, O.

A. I. Root strain of resisting and honey-gathering leather-colored Italian queens that a trial will convince. Untested, \$1.50 each; 25 or more, \$1.40; tested, \$2.50 each; 25 or more, \$2.25; select tested, \$3.00.

A. J. Pinard, Morgan Hill, Calif.

FOR SALE.—Bees, good hybrid stock from yards in 2-lb. packages, with a tested Italian queen, from home yard at \$7.00 per package; with three-banded untested queens, \$6.00. Two-frame nucleus, Italian bees, \$5.00; 3-frame, \$6.75.

C. H. Cobb, Belleville, Ark.

FOR SALE.—Mr. Beeman, head your colonies of bees with the best Italian stock raised in the South. One queen, \$1.25; 12 queens, \$14.00. One pound of bees with queen, postpaid, \$6.00. Safe arrival and satisfaction guaranteed.

M. Bates, Greenville, R. D. No. 4, Ala.

DAY-OLD QUEENS at practical prices. Superior improved Italian stock. Mailed in safety introducing cages. Safe arrival guaranteed to any part of the U. S. and Canada. Send for circular. Prices, 1, 75c; 10, \$6.00; 100, \$60.00.

James McKee, Riverside, Calif.

BUSINESS-FIRST QUEENS.—Untested, \$1.00 each; \$11.00 per doz.; select untested, \$1.50 each; \$12.00 per doz.; tested, \$2.00 each; select tested, \$2.50 each; breeding queens, \$5.00 and \$10.00 each. Safe arrival guaranteed in the United States.

M. F. Perry, Bradenton, Fla.

FOR SALE.—We are now booking orders for two- and three-frame nuclei at \$2.00 per frame that will average not less than 3,500 bees and brood to the frame. Queen, \$1.00 extra. Stock, Italian and hybrid.

Sarasota Bee Co., Sarasota, Fla.

LARGE HARDY PROLIFIC QUEENS.—Three-band Italian only. Pure mating and safe arrival guaranteed. June 1st, 1 queen, \$1.50; 6, \$8.00; 12, \$15.00. July 15, 1, \$1.30; 6, \$7.50; 12, \$13.50; 100, \$110.00. Address Buckeye Bee Co., Lock Box 448, Massillon, Ohio.

ITALIAN QUEENS.—Three-banded, select, untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price, \$1.25 each; 12 or more, \$1.00 each. Send for circular.

J. H. Haughey, Berrien Springs, Mich.

We have enlarged our queen yard considerably. We can take care of orders better than ever, large or small. April 15 to June 1, untested queens, \$1.25; tested, \$2.50; untested, \$15.00 per 100. After June 1, \$1.00 each or \$90.00 per 100. J. A. Jones & Son, Montgomery, R. D. No. 1, Box 11a, Ala.

FOR SALE.—By return mail, three-banded leather-colored Italian queens from the very best honey-gathering strain, \$1.50 each or \$15.00 per dozen; tested, \$2.00 each. You can buy cheaper queens elsewhere, but you cannot get better queens anywhere. Delivery and satisfaction guaranteed. I have no more 2-lb. package bees for sale this season. Jasper Knight, Hayneville, Ala.

FOR SALE.—Italian queens. Prices for untested in June, \$1.50 each; 6, \$8.25; 12, \$16.00; tested, \$2.50 each. After July 1, untested, \$1.25 each; 6, \$7.00; 12, \$13.50; tested, \$2.00 each; virgins, 75¢ each. Mismated queens replaced if returned in 30 days. Dead queens replaced if returned by return mail. Untested, ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

FOR SALE.—Quirin's hardy northern-bred Italians will please you. All our yards are wintered on summer stands; more than 25 years a commercial queen-breeders. Tested and breeding queens ready almost any time weather permits mailing. Untested, ready about June 1. Orders booked now. Testimonials and price for asking.

H. G. Quirin, Bellevue, Ohio.

FOR SALE.—Highest Grade Three-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, \$1.25; 6, \$6.50; 12, \$12.00; 50, \$47.50; 100, \$90. Your correspondence will receive prompt attention and I guarantee satisfaction.

A. E. Crandall, Berlin, Conn.

ITALIAN QUEENS.—The Old Reliable three-banded Italians, the best all-around bee to be had. Queens ready to mail April 1, 1920. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May: Untested, \$1.50; 6, \$8.00; 12, \$15.00. Tested, \$2.25; 6, \$12.00; 12, \$22.00. Select tested, \$3.00 each. Descriptive circular and price list free.

John G. Miller, 723 C St., Corpus Christi, Texas.

1920 prices on nuclei and queens. Miller strain. Queens, untested, \$1.50 each; \$15.00 per doz.; tested \$2.00 each, \$22.00 per doz. One-frame nucleus, \$3.00; two-frame, \$5.00; three-frame, \$6.50, without queens, f. o. b. Macon, Miss. We have never had any bee or brood disease here. Will have no queens except for nuclei until June 1. Safe arrival and satisfaction guaranteed.

Geo. A. Hummer & Sons, Prairie Point, Miss.

TESTED QUEENS.—I make a practice of requeening all my colonies each year with young queens. I am going to offer the tested queens for sale. They are descended from the Moore strain of leather-colored Italians. Only one year old this coming summer, right in the prime of their lives, just old enough to thoroly test them. I will begin mailing the queens the last of June, and finish in July. I like to have enough orders in advance to take them all, as I can work to better advantage in requeening. I will receive and book orders now, and will fill in rotation when I begin mailing them. Price, \$2.00 each; 12 for \$22.00. A few choice breeding queens, some two years old for \$5.00 each. Safe arrival and satisfaction guaranteed.

Elmer Hutchinson & Son, Lake City, Mich.

MISCELLANEOUS

Write for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job. The Deroy Taylor Co., Newark, N. Y.

FOR SALE.—Guinea Pigs. Brood sows, \$2.50. Young sows, \$1.50. Males, \$1.00. Pleasant Hill Caviery, 1629 E. Florida St., Springfield, Mo.

HELP WANTED

WANTED.—Man to work with bees on shares or wages and assist with farm work. Irwin Bros., Currant, Nevada.

WANTED.—Helper in large and extensive bee business. Exceptional opportunity for advancement to the right one. M. E. Ballard, Roxbury, N. Y.

WANTED.—One experienced beeman and one helper. Must be young man, able-bodied, and with good character. Prefer one man that can handle auto truck. State salary and give references when answering. Ernest W. Fox, Fruitdale, So. Dak.

WANTED.—We can use an experienced man in extracted-honey production during the season of 1920. Applicant kindly state age, experience, and wages expected in first letter, and oblige.

E. D. Townsend & Sons, Northstar, Mich.

WANTED.—One experienced man and students or helpers in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck, located near summer resorts. Write, giving age, height, weight, experience, reference, and wages wanted. W. A. Latshaw Co., Clarion, Mich.

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WANTED.—Beekeeper of 12 years' experience would like work in bee-yard in New Mexico, Arizona, or California, about June, July, or August 1. Rollin N. Carl, Bristol, Vt.

QUEENS!

Quirin's Improved Superior Italian Queens. They are Northern Bred and Hardy. Over 20 Years a Breeder.

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested - - -	\$1.00	\$5.00	\$9.00	\$7.75	\$4.00	\$7.00
Tested - - -	1.50	8.00	15.00	1.00	5.00	9.00
Select tested - - -	2.00	10.00	18.00	1.50	8.00	15.00

BREEDERS \$5.00 each. If wanted in a two-frame Nucleus, add \$5.00. No bees sold except where a breeder is wanted in a nucleus.

Safe delivery guaranteed; all grades of queens now ready to mail in reasonable quantities.

Send for testimonials. Orders booked now.

**H. G. Quirin, the Queen-breeder
Bellevue, Ohio**

BEES We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes, and three-frame nucleus colonies.

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We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

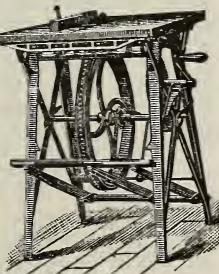
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This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

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JUNE

Untested	\$2.50
Select Untested	3.00
JULY TO OCT. 1	
Untested	2.00
Select Untested	2.50

Mott's Northern-bred Italian Queens

Untested, \$1.00 each; \$12.00 per dozen. Select untested, \$1.25 each; \$15.00 per dozen. Select guaranteed, pure mated, \$1.50 each. Select tested, \$2.50 each.

Plans "How to Introduce Queens, and Increase," 25¢.

E. E. Mott, - - Glenwood, Mich.

QUEENS

Golden and three-band Italians. The kind that fill from two to four supers.

Untested, \$2.00 each; \$11.00 for 6; \$45.00 for 25. No discount for 50 or 100 lots. Tested, \$8.00 each; \$16.00 for 6. Send orders for queens as early as possible. Full colonies (bees and queen) \$12.00 and \$15.00 for 8- and 10-frame Root Co. hives.

S. C. R. I. Red eggs for hatching (\$80 egg trapnested strains) \$2.50 per 15. \$12.00 per 100.

MISS LULU GOODWIN, Mankato, Box 294, Minn.

QUEENS OF MOORE'S STRAIN OF ITALIANS

Produce Workers
*That fill the super quick
With honey nice and thick*

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens \$1.50; 6, \$8.00; 12, \$15.00. Select untested, \$2.00; 6, \$10.00; 12, \$19.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, Queen Breeder
ROUTE 1 MORGAN, KY.

"QUEENS OF QUALITY"

3-band Italians only. Our breeding queen for this year comes from an outyard that averaged 170 lbs. last year, this particular colony storing 150 lbs. Queens of this strain are easily worth double what we are selling them for. Untested \$1.50 each. Circular.

J. I. BANKS, DOWELLTON, TENN.

QUANTITY DISCOUNTS

12 Queens	- 10 per cent discount
25 Queens	- 15 per cent discount
50 Queens	- 20 per cent discount
100 Queens	- 25 per cent discount

The A. I. Root Co., Medina, O., U. S. A.

Books and Bulletins

Bulletin No. 809, "American Foul Brood," by G. F. White, is based upon observations made in the laboratory and in the experimental apiary, and is for the practical beekeeper as well as those who wish to make further study of the disease. The bulletin discusses the resistance of *Bacillus larvae* to various destructive agencies; the effect of the disease on the colony; and the transmission and diagnosis of the disease.

A general description of the symptoms and a detailed and well-illustrated description of the exact appearance of the dead larva and also of dead pupæ during the five stages of the disease, make the bulletin of value to all beekeepers.

This disease, as has been known for some time, is caused by *Bacillus larvae* and is a disease of the brood and not of the adult bees. Mr. White has proved that all worker, drone, and queen larvæ are susceptible to infection, but he has not been able to produce infection in other insects or in animals.

The colonies on which he experimented were fed spores of the *Bacillus*, the infection taking place along the alimentary tract. He found that the incubation period is approximately seven days and that in about one month, after a heavy inoculation, the colony becomes weakened, but is not destroyed by the disease for three months or longer. Mr. White says that it is very rarely that any even slightly affected colony ever recovers from the disease without treatment. Altho the brood is susceptible to infection at all seasons, the disease is more severe during the second half of the brood-rearing season than during the first half. Neither the climate nor the quality or quantity of stores appears to affect the disease much.

The spores of American foul brood in scales, he found, sometimes remain virulent for years. They are very resistant to most destructive agencies. The most resistant spores when in water withstand 212 degrees F. for 11 minutes, and when in honey withstand the same temperature for half an hour. Sunlight destroys dry spores in 28 to 41 hours, and spores in honey in 4 to 6 weeks. When shielded from sunlight, spores in honey remain virulent for over a year. Spores resist fermentation and various drugs a long enough time to indicate that hope of treatment probably does not lie in this direction.

It is possible, Mr. White states, that the disease is sometimes transmitted thru the water supply, but the primary means of transmission is thru the stores, especially thru the robbing of diseased colonies and sometimes thru the placing of diseased combs in healthy colonies.

He does not consider flowers a medium for transmitting the disease, nor does he think there is much danger from tools, bee supplies, clothing, or hands. Even hives that have contained diseased colonies, he says,

do not always transmit the disease, altho he advises flaming out the insides of the hives to make them safe.

It is our sincere hope that none of our readers will get the idea that American foul brood is not as easily transmitted as they had believed, for it is certain that the disease is readily transmitted by any medium that is contaminated with diseased honey. Elsewhere in the bulletin we find a statement that the likelihood of the disease being transmitted by combs from diseased colonies is probably frequently overestimated, and that such spreading of the disease probably depends considerably upon the amount of infection in the colony from which the comb was taken and also, to some extent, upon the presence or absence of brood in the colony to which the combs are given. Sufficient facts, it is asserted, are wanting to make definite statements in regard to the probability of infection in such cases. From our own experience as well as that of others, we believe that combs from diseased colonies often contain diseased honey, and that they are always a source of danger if any of the cells have ever contained diseased larvæ. If a beekeeper is really anxious to get rid of the disease, we do not think it will pay him to take chances in using combs from diseased colonies. Again, Mr. White says that colonies in which the disease has been produced thru artificial inoculation can be kept in the experimental yard without transmitting the disease to other colonies, and he believes this fact of importance in the control of the malady. In actual practice there are so many accidents that might happen to an infected colony which would allow other colonies access to the diseased honey, that it is safer to move all such colonies to a hospital yard for treatment.

Another new government bulletin, No. 1084 is "Control of American Foul Brood," by E. F. Phillips. This short pamphlet, altho it gives no new developments, sums up the vital facts of importance to the practical beekeeper in the treatment of American foul brood. All beekeepers will find valuable advice in this bulletin, as "Never feed honey purchased on the open market"; and "In introducing purchased queens, transfer them to clean cages provided with candy known to be free from contamination, and destroy the old cage, candy, and accompanying workers." Also, when speaking of using extracting combs from diseased colonies he fully sizes up the situation from the standpoint of the producer when he says: "The saving of such combs, however, is extremely dangerous, and such a policy is not to be advised. The beekeeper who takes all the precautions which it is possible to take, is the one who most quickly and cheaply eradicates American foul brood from his apiary."

Apply to Division of Publications, U. S. Dept. of Agriculture, Washington, D. C., for the two bulletins referred to above.

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Prompt and BECAUSE—Only Root's Goods are sold.
Efficient It is a business with us—not a side line.
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ROUTE 1 MANCHESTER, TEXAS

will rear the well-known Murry Strain of
3-banded Italian Queens at the following

Prices	1	6	12
Untested	\$1.50	\$ 8.00	\$14.50
Tested	2.50	12.00	22.00
Select tested	3.00	16.50	30.00

Breeders, 5.00 to \$10.00

A limited number of 2-frame nuclei with un-
tested queens at \$6.50 each, f. o. b. our
shipping point. Safe arrival at your express
office guaranteed. Some of this strain of
bees stored 375 pounds of surplus honey
per colony in 1919.

World's Best Roofing
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"Reo" Cluster Metal Shingles, V-Crimp, Corru-
gated, Standing Seam, Painted or Galvanized Roof-
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cost less; outlast three ordinary roofs. No painting
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Queens--Rhode Island--Queens

Italian Northern-bred queens. Very gentle
and hardy. Great workers. Untested, \$1.25
each; 6 for \$7.00. Circular on application.
Queens delivered after June 1.

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HONEY-MAKING, MONEY-MAKING

ITALIAN QUEENS

Untested - - \$1.50 each; 25 or more, \$1.35

Tested - - 2.50 each; 25 or more, 2.25

Select tested, each - - - - - 3.00

Circular free. All letters answered promptly
and cheerfully.

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In big and small shipments,
to keep Buck's Weed-pro-
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plant for 1920. We are
paying higher prices than
ever for wax. We work
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Big stock, wholesale and
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The Comb-foundation Specialist

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3-Banded Italian Queens

MAY THE FIRST TO JULY THE FIRST

Untested	- - 1,	\$1.50	12,	\$13.00
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Mr. Beekeeper and anticipate your needs for the coming season and order early. Root's goods in stock at factory prices. Send for 1920 catalog.

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Leininger's Strain ITALIANS

have a record of 35 years. Queens ready in June. Untested, each, \$1.75; 6, \$8.50. Tested, each, \$2.50; 6, \$14.00. Select breeders, \$15.00 each. Every queen guaranteed.

Fred Leininger & Son, Delphos, O.

NEWMAN'S ITALIAN QUEENS

Bred from the best. No disease. Satisfaction and safe arrival guaranteed.
Untested, \$1.25; 6, \$7.00; 12, \$13.50, Select
Untested, \$1.75; 6, \$9.00; 12, \$17.00.
Circular free.

A. H. NEWMAN, - - MORGAN, KY.

INDIANOLA APIARY

Will furnish 3-banded Italian Bees and Queens as follows: Untested Queens, \$1.00; Tested, \$1.50. Nucleus, \$2 per frame, queen extra.

J.W.SHERMAN, VALDOSTA, GA.

FOR SALE--THREE-BAND ITALIAN QUEENS

From best honey-gathering strain obtainable. (No disease.) Untested queens, \$1.25 each; 6, \$6.50; 12, \$12. Select untested, \$1.50 each; 6, \$9; 12, \$18. Tested, \$2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.

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WE HAVE A LARGE STOCK OF ROOT'S SUPPLIES AND CAN GIVE YOU PROMPT SHIPMENT, SAVING YOU TIME AND TRANSPORTATION CHARGES. TRY US WITH YOUR ORDERS. CATALOG ON REQUEST.

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AM NOW BOOKING ORDERS FOR

MICHIGAN - BRED QUEENS

THREE-BANDED ITALIANS ONLY

TESTED DISEASE-RESISTERS

PRICES	June 15 to July 15			July 15 to Oct. 1			
	1	6	12	1	6	12	100
Untested	\$1.50	\$8.00	\$15.00	\$1.30	\$7.50	\$13.50	\$110.00
Select Untested	1.75	9.00	16.00	1.60	8.00	14.00	115.00
Select Tested any time after June 20				3.00	16.00	29.00	
Select Day-old Virgins after June 1				.60	3.50	6.50	50.00

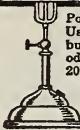
All queens hatched in nursery cages, and any inferior ones are killed. All queens mated in two-frame or three-frame nuclei. No baby nuclei in yard. Books opened April 1. If you are going to need good queens this summer, now is the time to order them.

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We haven't the room here to tell you all the reasons why we believe you would find a subscription to the Beekeeper a good investment; but we printed some extra copies for April and May, and if you will send us 10c (stamps or silver) for a copy of the May number we will mail it promptly and include, free, a copy of the April number. Or send us 50c for the magazine the balance of this year—7 months. We have some attractive book clubbing offers we would like to tell you about. Let's hear from you today!

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We carry a large stock for prompt shipment at reasonable prices. Send for special circular.

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We are supplying choice queens and package bees from a breeder in Santa Clara County. Send us your order.

NEW PRICES

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Behind every queen, hive, super or pound of foundation we sell, stands our guarantee of "absolute satisfaction or money back."

Send at once for our red catalog---order from it.

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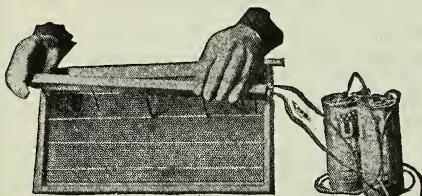
Where the Best Beehives Come From

Prisoners in a Canyon.—Continued from Page 344.
tures were exaggerated. But they were not. They were insignificant compared with the reality. The wonder and grandeur of Mt. Massive and the surrounding mountains, majestic peak after peak as far as the eye can see, fills the beholder with awe and surprise.

After an uneventful ride thru the Royal Gorge we pulled into Denver right on the minute, 48 hours late. And then we passengers discovered that our car contained quite the nicest traveling companions we had ever met, and we were all extremely sorry to part with each other. "I suspect it was because we were prisoners together.

Here is something which I have discovered about the difference between the East and the West and my friends have had similar experiences. In the East the atmosphere has a quality of making a person transparent or invisible. At least on Eastern trains I have noticed that the majority of people look right thru me, if we have not been properly introduced, altho, strange to say, they seem to see me just enough to avoid collision. But in the West, altho, of course, the trains are filled largely with Eastern people, my fellow travelers not only see me but are delightfully friendly and informal. Can you explain it? I don't pretend to understand it, but I do love the West.

Electric Imbedder



Price without Batteries, \$1.25

Actually cements wires in the foundation. Will work with dry cells or with city current. Best device of its kind on the market. For sale by all bee-supply dealers.

Dadant & Sons Manufacturers Hamilton, Ills.

**BANKING
BY MAIL
AT 4%**

THE SAVINGS DEPOSIT BANK Co.
A.T. SPITZER, Pres.
E.R. ROOT, Vice Pres. E.B. SPITZER, Cash.

SURPLUS money which does not work means money wasted.

Our Banking by Mail Department enables the people of this entire country to avoid this waste.

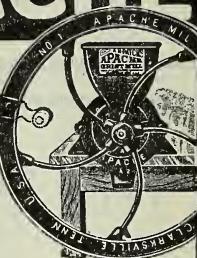
Four per cent compound interest paid on savings, and our large resources and conservative management assure complete safety. Write for detailed information.

This Ball Bearing **APACHE**

Grist Mill

PREPAID FOR ONLY

\$800



FEED the hopper, turn the wheel, and enjoy making your own wholesome whole wheat or graham flour, old-fashioned corn meal, rye flour, chops and hominy, and bring down living cost. Best coffee and spice grinder. If you have poultry, grind your chicken feed, save feed money and get more eggs.

Apache grinding plates of special mixture iron made to give longest wear. Steel ball bearings make it only a boy's job to run it. Send money or check today. Satisfaction guaranteed. For the present we can make prompt delivery. So don't delay.

A. H. PATCH, Inc., Clarksville, Tenn.

The Apache Grist Mill is companion to the Black Hawk Corn Sheller, famous for 35 years for its "Can't Wear Out" Guarantee.

HYBRID POTATO SEED

Every seed will produce a new VARIETY of potato, some white and some red, some early and some late, no two alike, 100 or more seeds in each package. One package and three months' subscription to our Magazine, "Special Crops," regular price \$1.00; special price three months and seeds, 25 cents PUBLISHER OF SPECIAL CROPS, SKANEATELES, N. Y.

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power white light. Just what the farmer, dairyman, stockman, etc., needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. THE BEST LIGHT CO. 306 E. 5th St., Canton, O.

Lewis Bee Supplies—Dadant Foundation

A full line of supplies for the practical bee men at your command.
Additional information to beekeepers gladly supplied upon request.

A Post Card Will Bring Our Catalog—Write Dept. C.

Western Honey Producers :: Sioux City, Iowa

THAGARD'S ITALIAN QUEENS

Bred for Quality. My Three-band queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting, and honey-producers.

	April 1st to July 1st.			July 1st to Oct. 1st.		
	1	6	12	1	6	12
Untested	\$1.50	\$7.50	\$13.50	\$1.25	\$6.00	\$12.00
Select Untested	1.75	9.00	16.00	1.50	8.00	13.00
Tested	2.50	13.00	24.00	2.00	12.00	20.00
Selected Tested	5.00	22.00	41.50	3.50	20.00	36.00

I guarantee pure mating, safe arrival, and perfect satisfaction, circular free.

V. R. THAGARD :: GREENVILLE, ALABAMA

QUALITY QUEENS ^A QUANTITY PRICES

BREED THREE-BAND ITALIANS ONLY

PRICES for 1920	Before July 1st			After July 1st		
	1	6	12	1	6	12
Untested	\$1.75	\$9.00	\$16.00	\$1.50	\$8.00	\$14.00
Select untested	2.00	10.00	18.00	1.75	9.00	16.00
Select tested	3.00 each			2.75 each		

Queens are reared from mothers whose colonies are gentle, hardy, and as honey gatherers are hustlers. Each and every queen reared by the latest and most approved methods, thus insuring queens that are capable of duplicating the excellent characteristics of their mothers. Satisfaction and safe arrival guaranteed in U.S. and Canada. Anticipate your needs and place your order now.

HERMAN McCONNELL :: ROBINSON, ILLINOIS

1920 QUEENS 1920

A colony of bees with a poor queen is worth the hive and fixtures. A colony of bees with a good queen has no limit in value, the honey flow alone being the determining factor. I am using my thirty-five years of beekeeping and queen-rearing experience to produce the best that can be produced, and sell at a figure that will sustain the high quality of my queens.

PRICES

One, \$2; three, \$5.50; six, \$10; twelve, \$19. All amounts over one dozen, \$1.50 each. I sell only untested queens and make a specialty of this line. I select no queens, but try to have them all so good that there is little chance for selection. 1920 circular now ready.

Season opens April first.

P. C. CHADWICK

KERN COUNTY

DELANO, CALIF.

WHEN YOU THINK OF BEEKEEPERS' SUPPLIES THINK OF INDIANAPOLIS

We carry a complete line of Root's goods and we solicit your trade. Our slogan: Courteous treatment and prompt service, Catalog for the asking.

THE A. I. ROOT COMPANY (Indianapolis Branch) 873 MASS. AVE.

BEEKEEPERS' SUPPLIES QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away. Bees are valuable. We have every thing required for practical beekeeping. Our goods for Ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out; send for one. It is full of good stuff.

AUGUST LOTZ COMPANY -:- BOYD, WISCONSIN

DOLL SAYS

don't invite Disappointments by delay in ordering your Honey Containers. Make sure of having all the Cans and Bottles you will need, by ordering them NOW. I am splendidly prepared to fill all orders for Friction Top Cans of 3 lbs. to 10 lbs. capacity—5-gallon Square Cans—and ½-lb. to 3-lb. white flint glass Screw Top Honey Bottles. Standard-grade goods, at prices that will interest you.

AN EASY WAY TO SAVE MONEY

You can save 15 per cent to 20 per cent on the cost of your Honey Cans and Bottles this year, by ordering them from DOLL—and instructing us to ship direct from factory to you.

I am also ready to make prompt shipments of anything wanted in the way of White Pine Hives, supers, extractors, Foundation, and other Supplies—none better to be had in either Style, Quality or Construction.

BE ready when the Honey begins to flow, by GETTING ready NOW.

Be sure to get my price quotations before ordering this year's Supplies.

P. J. DOLL BEE SUPPLY CO.

NICOLLET ISLAND

MINNEAPOLIS, MINN.

HERE THEY ARE, MR. BEEKEEPER, AT NEWARK
Wayne County, New York, ready to answer your call, the best of everything !!

Just Read This List

Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Press, and other supplies.

Dadant's Unexcelled Foundation, all standard weights and sizes. Also the Electric Wire Imbedder.

Bingham Uncapping Knives, including steam-heated with oil stoves and generators.

Bingham Smokers, all sizes, with genuine leather bellows.

Root's Extractors, all sizes of hand and power Machines.

Bee Books written by all leading authors in beedom.

All Sizes of Friction-top Pails and also 60-pound Cans, new and second-hand. Also Cement-coated Nails for nailing beehives and supplies.

All-sized Spools of Tinned Wire, Bee Brushes, Feeders, Queen-rearing Cages, Bee Gloves, Capping Melters, and all practical supplies you will need.

A Market for your Honey or Wax, and a plant to render your Old Combs and Capings.

Over 1,000 Beekeepers took advantage of this Service Station at Newark in 1919, for the first time. Now *all together* for a greater 1920.

New Catalog Free, and Our Discounts Will Save You Money. Address

The Deroy Taylor Co., :- Newark, Wayne Co., New York

SELL YOUR CROP OF HONEY

TO
HOFFMAN & HAUCK, INC.
WOODHAVEN, N. Y.

NO LOT TOO LARGE OR TOO SMALL FOR US TO HANDLE

Mail Sample of Extracted, State Quantity and How
Packed and We Will Make You Our Best Offer

CONTAINERS FOR YOUR CROP

All Sizes, Glass or Tin

2½-lb. Pails, per case of 24.....	\$1.80 each	Crates of 100.....	\$7.00
5 -lb. Pails, per case of 12.....	1.65 each	Crates of 100.....	10.70
10 -lb. Pails, per case of 6.....	1.35 each	Crates of 100.....	17.00
White Flint Glass Quart Jars (3 lbs. honey) with gold lacquered screw caps, per case of 12.....			1.10
5-Gallon Tins, used, good condition, 2 tins per case.....			.50

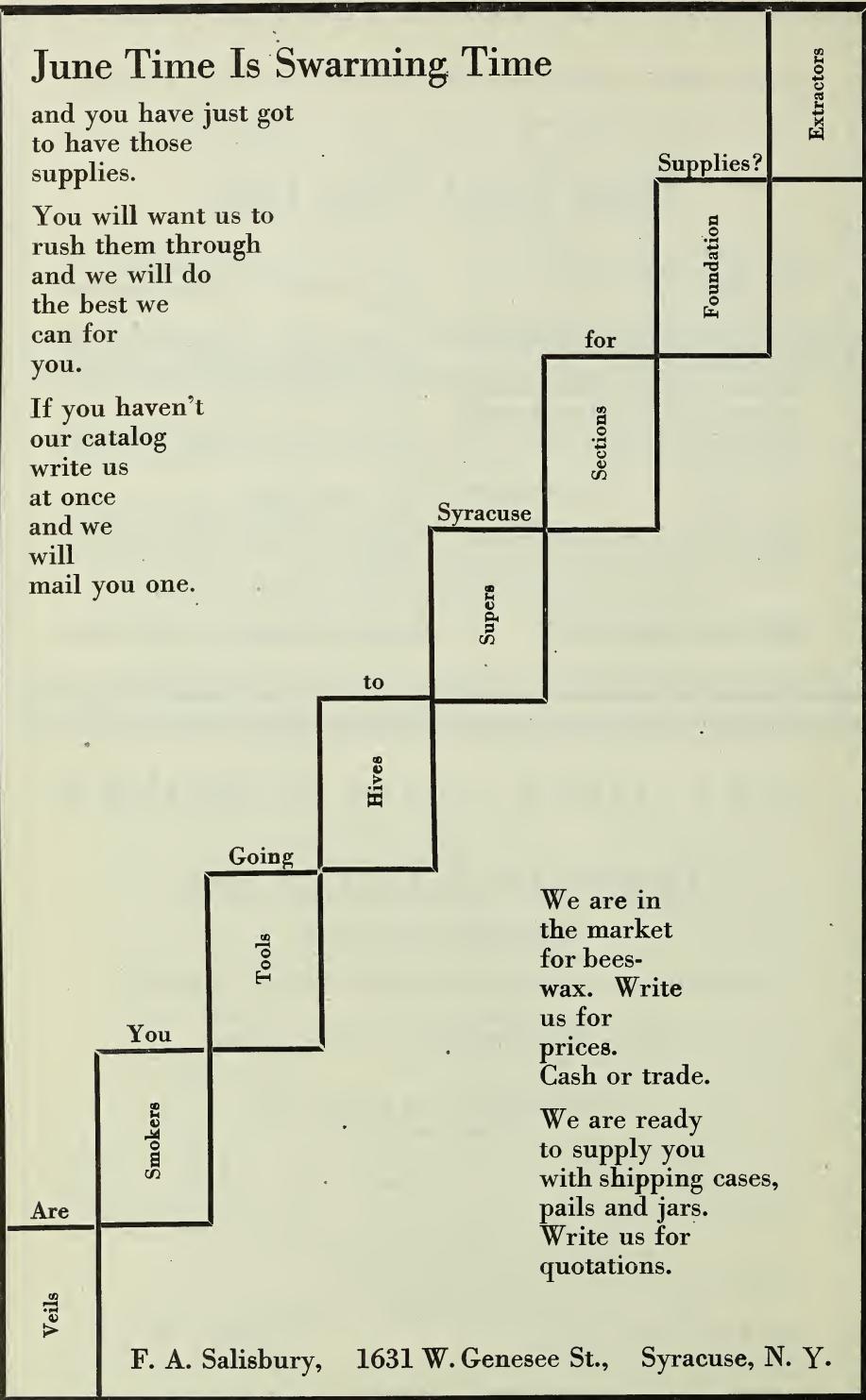
HOFFMAN & HAUCK, Inc. :- :- WOODHAVEN, N. Y.

June Time Is Swarming Time

and you have just got
to have those
supplies.

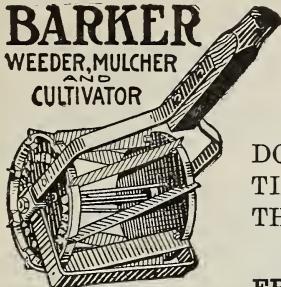
You will want us to
rush them through
and we will do
the best we
can for
you.

If you haven't
our catalog
write us
at once
and we
will
mail you one.



F. A. Salisbury, 1631 W. Genesee St., Syracuse, N. Y.

BARKER
WEEDER, MULCHER
AND
CULTIVATOR



Weeds and Mulches In One Operation

DOES BETTER WORK THAN A HOE—TEN TIMES AS FAST—SAVES TIME AND LABOR, THE TWO BIG EXPENSE ITEMS—EASY TO OPERATE.

FREE—Illustrated Book and Factory-to-User Offer

We want every garden grower to know just how this marvelous machine will make his work easier and increase his profits. So we have prepared a book showing photographs of it at work and fully describing its principle. Explains how steel blades, revolving against a stationary knife (like a lawn mower) destroy the weeds and at the same time break up the crust and clods and pulverize the surface into a level, moisture-retaining mulch.

"Best Weed Killer Ever Used"

LEAF GUARDS—The Barker gets close to the plants. Cuts runners. Has leaf guards; also easily attached shovels for deeper cultivation—*making three garden tools in one*. A boy can use it. Five sizes. Send today for book, free and postpaid.

BARKER
MFG. CO.
Dept. 10

DAVID CITY, NEB.

Gentlemen.—Send me postpaid your free book and Factory-to-User Offer.

Name _____

State _____ Town _____

R. R. No. Box _____

BARKER MANUFACTURING CO.

Dept. 10

David City, Nebraska

QUEENS FROM SELECT BREEDING

Twenty Years of Experimenting. We have nothing but the very best.

3-Band Only

Price Cash With Order

Before July 1st

Untested	- - - - -	\$1.50
Selected	- - - - -	2.25
Tested	- - - - -	3.00
Selected	- - - - -	3.50

Orders filled in rotation.

Write for prices in large quantities.

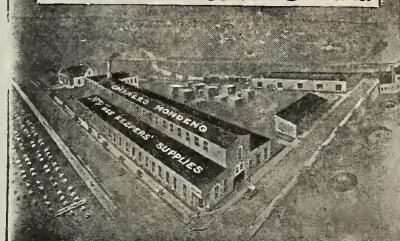
Did you get what you were looking for when you bought your last year's Queens? If not, try one that will please you. My queens are reared on a new system, large and prolific, surpassed by none but superior to many.

F. M. RUSSELL

ROXBURY, OHIO R. F. D. No. 2

BEE SUPPLIES

CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.



The largest and oldest Bee Supply manufacturer in Minnesota can offer you bee ware that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Send for my 1920 Catalog and Price List. Think it over and in thinking be wise and save money by placing your orders before the rush is on. Will Take Beeswax in Trade at Highest Market Prices.

CHARLES MONDENG

146 Newton Ave., N. Minneapolis, Minn.

QUEENS Package Bees QUEENS

Did you read Prof. H. F. Wilson's write-up in the March issue of Gleanings, in regard to the packages of bees he received from me last year? Notice he said some of those

PACKAGES RECEIVED IN MAY GAVE 150 LBS. OF HONEY

That speaks for the quality of our *queens*. The 2-pound packages with Queens shipped to Mr. David Running (then President of the National Beekeepers' Association) in 1917, three years ago, gave him 140 pounds that season. Have booked all I can guarantee shipping on time for April, but send for *Free Circular* for later shipping which states our guarantee, also gives prices on bees by parcel post, Nuclei, etc.

THREE-BANDED AND GOLDEN QUEENS.

Have secured the best queen men obtainable and we are prepared to turn out 6,000 queens per month. They do nothing but rear the best of *queens*; careful inspection before shipping. Have an entirely separate crew for shipping bees, etc. Twenty years a beekeeper.

Prices f. o. b. Here, by Express.

Queens.

1-lb. pkg. bees, \$2.40; 25 or more...	\$2.16	Untested, \$1.50 each; 25 or more...	\$1.35
2-lb. pkg. bees, 4.25; 25 or more...	3.83	Tested, \$2.50 each; 25 or more....	2.25
3-lb. pkg. bees, 6.25; 25 or more...	5.62	Select tested, each.....	3.00

Add price of queen wanted when ordering bees.

NUECES COUNTY APIARIES .-. CALALLEN, TEXAS
E. B. AULT, Prop.

QUEENS OF QUALITY

FARMER'S QUEENS SPEAK FOR THEMSELVES.

Mr. Beekeeper, why not get a good queen while you are buying? Farmer's queens produce workers that fill the supers quick with honey that is most delicious to eat. They are bred for honey production strictly. Shipping season is here; now is your time to head your colonies with a good queen; one that will keep the hive chock-full of bees at all times, makes the biggest yields of honey, sting less, and look the prettiest. Our strain of Italians will go a long distance after nectar; in a high degree they are very resistant to disease, gentle and beautiful.

PRICES FROM APRIL TO JULY:

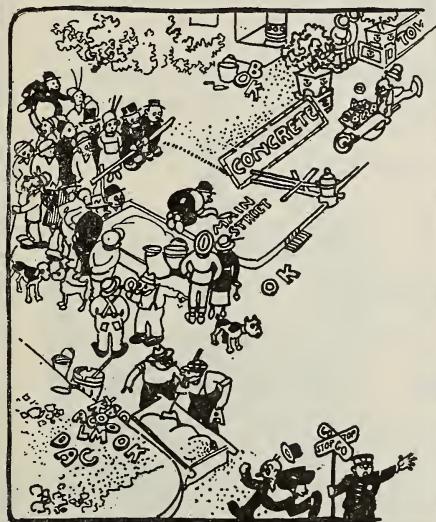
	1	6	12	100
Untested	\$1.50	\$7.50	\$13.50	\$1.00 each
Select untested	1.75	9.00	16.50	1.25 each
Tested	2.50	18.00	24.50	2.00 each
Select Tested	4.00	22.00	41.50	3.35 each

Limited number of 1-frame Nuclei for sale from the 20th of June on, with young, vigorous queen on good combs full of brood and plenty of bees, for \$5.25 each. Guaranteed free from disease; never been any disease in neighborhood; shipment made next day after order is received; we guarantee everything we sell; you take no risk when you deal with us; safe arrival and satisfaction is our motto; customer is the judge. Reference: Bank of Ramer, Ramer, Ala.

The Farmer Apiaries . . . Ramer, Alabama

"Where the Good Queens come from"

A RED LETTER DAY IN CONCRETE TOWN



That Sign for Your Apiary

SHOULD BE MADE
THIS SPRING!

We will mail you on application a small folder on how to make your own signs by using our all-weather-proof burned clay letters. They can be used on buildings, walks, lawns or roadside.

Write for a "Red Letter Day in Concrete Town"

UNITLE
REGISTERED TRADE MARK

The Unitile Co., Columbus, Ohio
Dept. B

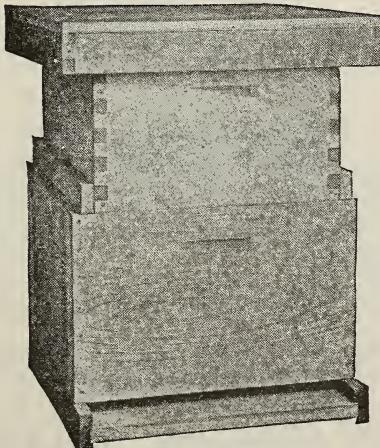
Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

Modified Dadant Hive



Modified Dadant Hive Features.

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced $1\frac{1}{2}$ inches for swarm control.
3. Extracting frames $6\frac{1}{4}$ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

For free booklet write any distributor of Lewis "Beeware," or to

G. B. Lewis Company
Dadant & Sons

Watertown, Wisconsin
Hamilton, Illinois

ITALIAN BEES AND QUEENS

We are prepared to give better service in every respect than we have ever given in Bees and Queens and supplies

UNTESTED QUEENS

	To June 15th	After June 15th	
1	\$1.50	1	\$1.25
12 or more.....	1.25	12 or more.....	1.00

TESTED QUEENS

To June 15th.....	\$3.00	After June 15th.....	\$2.00
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BEES

1-pound packages	\$3.00	2-pound packages	\$5.50
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We will furnish one comb filled full of brood with one pound of bees for \$5.50, no queen. You are almost sure that these will reach you in perfect shape. You get a 50c comb; they will build up much quicker than a 2-pound package. There is no danger of their swarming out.

NUCLEI

1-frame	\$4.00	2-frame	\$7.00	3-frame	\$9.50
---------------	--------	---------------	--------	---------------	--------

No queens included at above prices.

Nuclei are on good combs, full of brood with plenty of bees.

FULL COLONIES

• We can furnish, and can ship on date specified, full colonies of bees in new hives, good comb, and good strong colonies with Tested Queens:	8-frame	\$18.00	10-frame	\$20.00
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DR. MILLER'S QUEENS

Let's make this a Miller queen year. Dr. Miller has furnished us breeders from his apiaries, and we are the only ones that he furnishes breeders to. In these queens you get the fruits of the foremost beekeeper of the world. We pay Dr. Miller a Royalty on all queens sold.

To June 15th

After June 15th

1	\$2.00	1	\$1.50
12 or more, each.....	1.60	12 or more, each.....	1.25

We carry a full line of Root's supplies, including the new Root-Weed foundation, Prompt Service.

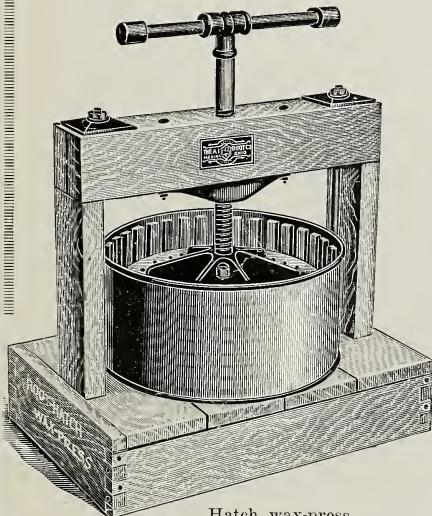
THE STOVER APIARIES

Successors to
THE PENN COMPANY
Penn, Miss.

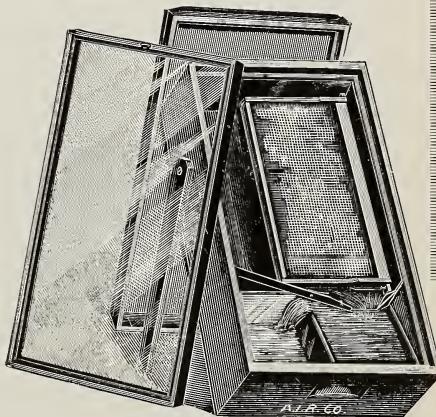
MAYHEW, MISS.

SAVE YOUR BEESWAX

Beeswax is bringing 40 cents and over on the market today, and you cannot afford to overlook this profitable by-product. By the use of one of the machines listed below every ounce of the wax you have been wasting may be saved and turned into money. If you have had the misfortune of losing your bees the past winter, and there are some of the old combs you do not wish to use again, they should be run thru a wax-extractor or press.



Hatch wax-press



Solar wax-extractor

	Wt.	Price
A472809—Hatch wax-press, single.....	70 lbs.	\$15.00
A472806—Hatch wax-press, double.....	150 lbs.	25.00
A472807—Solar wax-extractor	30 lbs.	8.00
A472808—Boardman solar wax-extractor.....	110 lbs.	20.00

BEESWAX WANTED.

We are paying today for pure average beeswax delivered here 40c in cash or 42c in exchange for any of our bee supplies. Since we use enormous quantities of beeswax each year in the manufacture of comb foundation, we are always in the market for a good grade of wax regardless of quantity.

Ship your wax in double gunny or grain sacks, that is, a double thickness of sack. Mark your name on the inside and the outside of package.

THE A. I. ROOT CO., MEDINA, OHIO

New York - 139-141 Franklin Street St. Paul - - - - 290 East 6th Street
Philadelphia - - - 8-10 Vine Street Norfolk - - - 10 Commerce Street
Chicago - 224-230 West Huron Street Indianapolis - 873 Massachusetts Ave.

THE BEGINNING OF DADANT'S FOUNDATION

It was in 1878, Charles Dadant, then 61 years old, and his son, C. P. Dadant, 27 years old, obtained one of the first foundation mills made. And it was then that DADANT'S FOUNDATION had its beginning.

They had some 300 colonies of bees in 4 apiaries and were desirous of manufacturing foundation that would satisfy their bees as well as themselves.

Father and son did the work themselves, in an old log house, or if the weather permitted, in the shade of a small oak sapling just north of the house.

There were other beekeepers just as anxious as they to get good comb-foundation and the first year, besides supplying their own needs the Dadants sold 500 pounds. Thus for the first time DADANT'S FOUNDATION was placed on the market.

The little oak sapling grew as did their foundation business. The second year they sold 2,000 pounds of DADANT'S FOUNDATION and had to hire some help. All of the wax rendering was done by the elder Dadant who took great pains to do a neat job, and retain in the beeswax the odor of the hive, of the bees, of the honey.

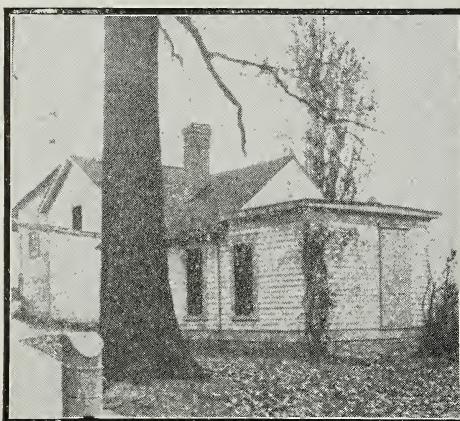
The shade of the little oak sapling no longer sufficed, their first wax-melting room was soon outgrown, for DADANT'S FOUNDATION was being built on a firm basis, like the oak, and was to see a corresponding growth.

DADANT'S FOUNDATION (every inch, every pound, every ton, equal to any sample we have ever sent out). Specify it to your Dealer.

If he hasn't it write us.

DADANT & SONS, HAMILTON, ILL.

CATALOG AND PRICES OF BEE SUPPLIES, BEESWAX, WAX WORKING INTO COMB FOUNDATION AND COMB RENDERING FOR THE ASKING.



The little oak sapling under which DADANT'S FOUNDATION was first made is now 3 feet thru. The little flat top room at the right was the first Dadant Foundation factory.